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FEDERAL - STATE - PRIVATE  
COOPERATIVE

**SNOW SURVEY and WATER SUPPLY FORECASTS  
for  
OREGON**

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE  
and

OREGON AGRICULTURAL EXPERIMENT STATION  
and  
STATE ENGINEER of OREGON

Data included in this report were obtained by the agencies named above  
in cooperation with other Federal, State and private organizations.

AS OF  
**JAN. 1, 1961**

# UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

## To Recipients of Cooperative Snow Survey and Water Supply Forecast Reports:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

### PUBLISHED BY SOIL CONSERVATION SERVICE

<u>REPORTS</u>	<u>ISSUED</u>	<u>LOCATION</u>	<u>COOPERATING WITH</u>
<b>RIVER BASINS</b>			
COLORADO AND STATE OF UTAH — MONTHLY (JAN. MAY) — SALT LAKE CITY, UTAH — UTAH STATE ENGINEER AND OTHER AGENCIES			
COLUMBIA	MONTHLY (JAN.-MAY)	BOISE, IDAHO	IDAHO STATE RECLAMATION ENGINEER
UPPER MISSOURI AND STATE OF MONTANA	MONTHLY (FEB.-MAY)	BOZEMAN, MONTANA	MONT. AGR. EXP. STATION
WEST-WIOE	OCT. 1, APR. 1, MAY 1	PORTLAND, OREGON	ALL COOPERATORS
<b>STATES</b>			
ALASKA	MONTHLY (MAR.-MAY)	PALMER, ALASKA	ALASKA S.C.D.
ARIZONA	SEMI-MONTHLY (JAN. 15 - APR. 1)	PHOENIX, ARIZONA	SALT R. VALLEY WATER USERS ASSOC. ARIZ. AGR. EXP. STATION
COLORADO AND NEW MEXICO	MONTHLY (FEB.-MAY)	FORT COLLINS, COLORADO	COLO. AGR. EXP. STATION COLO. STATE ENGINEER N. MEX. STATE ENGINEER
IDAHO	MONTHLY (FEB.-MAY)	BOISE, IDAHO	IDAHO STATE RECLAMATION ENGINEER
NEVADA	MONTHLY (FEB.-APR.)	RENO, NEVADA	NEVADA DEPT. OF CONSERVATION AND NATURAL RESOURCES DIVISION OF WATER RESOURCES
OREGON	MONTHLY (JAN.-MAY)	PORTLAND, OREGON	ORE. AGR. EXP. STATION OREGON STATE ENGINEER
WASHINGTON	MONTHLY (FEB.-MAY)	SPOKANE, WASHINGTON	WN. STATE DEPT. OF CONSERVATION
WYOMING	MONTHLY (FEB. JUNE)	CASPER, WYOMING	WYOMING STATE ENGINEER

Copies of these various reports may be secured from: Head, Water Supply Forecasting Section  
 Soil Conservation Service,  
 209 S. W. Fifth Ave., Portland 4, Oregon

### PUBLISHED BY OTHER AGENCIES

<u>REPORTS</u>	<u>ISSUED</u>	<u>AGENCY</u>
BRITISH COLUMBIA	MONTHLY (FEB.-JUNE)	COMPTROLLER, WATER RIGHTS BR., DEPT. OF LANOS AND FORESTS PARLIAMENT BLDG., VICTORIA, B.C., CANADA
CALIFORNIA	MONTHLY (FEB.-MAY)	CALIF. DEPT. OF WATER RESOURCES, SACRAMENTO, CALIF.

FEDERAL - STATE - PRIVATE  
COOPERATIVE  
**SNOW SURVEY and WATER SUPPLY FORECASTS**  
**for**  
**OREGON**

ISSUED

**JANUARY 8, 1961**

*Report prepared by*

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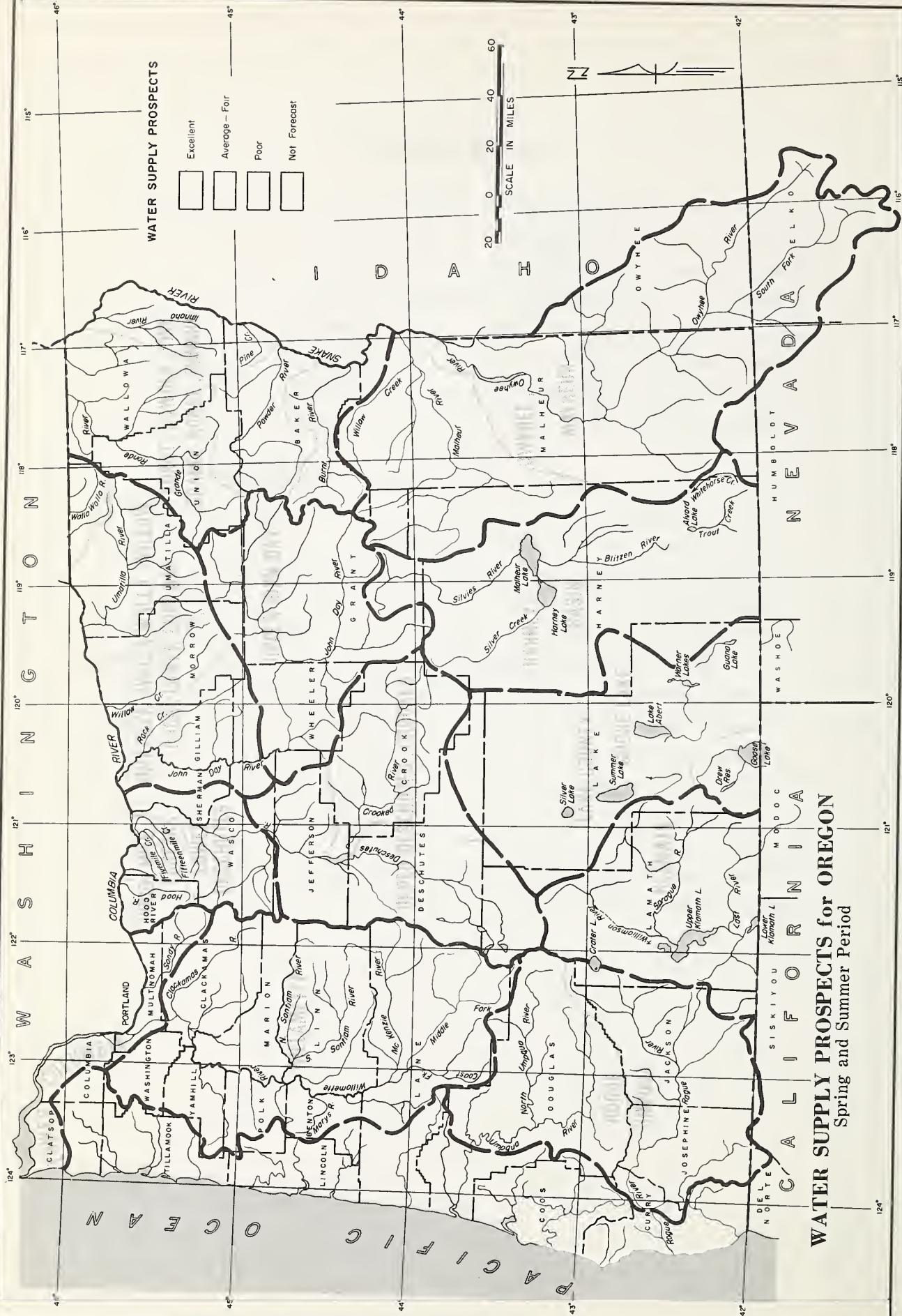
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# WATER SUPPLY PROSPECTS for OREGON

Spring and Summer Period

Spring and Summer Period



# WATER SUPPLY OUTLOOK for OREGON

January 1, 1961

The early winter outlook for Oregon's 1961 water supplies range from "near average" to "fair". Reservoir storage is far below normal again this year but the mountain snow pack is better than last year although still one-third below normal.

## SNOW COVER:

Water content of the snow pack on Oregon watersheds is 70 percent of the 1943-57 January 1 average. This is much better than the 25 percent last year at this time. The poorest snow pack is the 49 percent of average on Willamette Valley watersheds and again this year the best January 1 snow pack is the 85 percent of average found in northeastern Oregon.

Usually about 37 percent of the total winter's "snow crop" is on the ground by January 1. This year, current snow surveys indicate the 26 percent level has been reached. This is 11 percent short of the average but still 15 percent better than last year at this time.

## SOIL-MOISTURE:

Watershed soils were well wetted in the top 1 to 2 feet by above normal November rainfall and the concentration of this moisture near the surface is expected to aid greatly in spring runoff.

## RESERVOIR STORAGE:

Water stored in 20 irrigation reservoirs over the state is 67 percent of the 15 year average (1943-57) for January 1st. This is about the same as last year at this time.

These low storage figures are a reflection of exceptionally dry conditions last summer, causing above normal use of water.

The five multi-purpose reservoirs in the Willamette Valley are now at minimum flood pool levels. These reservoirs will be filled, as the winter progresses, according to a pre-arranged plan by the Corps of Engineers.

## PRECIPITATION:

State-wide precipitation<sup>1</sup> since October 1st has been 89 percent of average. Heavy November precipitation over most of the state helped a dry fall recover to just 11 percent less than the 1943-57 average.

## STREAMFLOW:

The streamflow outlook for the 1961 irrigation season is better than last year at this time but still below the 15 year average. It is still early in the winter, however, and the next 90 days can change this outlook considerably.

Flow of 15 key Oregon streams<sup>2</sup> has averaged 77 percent of normal since October 1st and ranges from a low 60 percent on the John Day to 92 percent on the Deschutes.

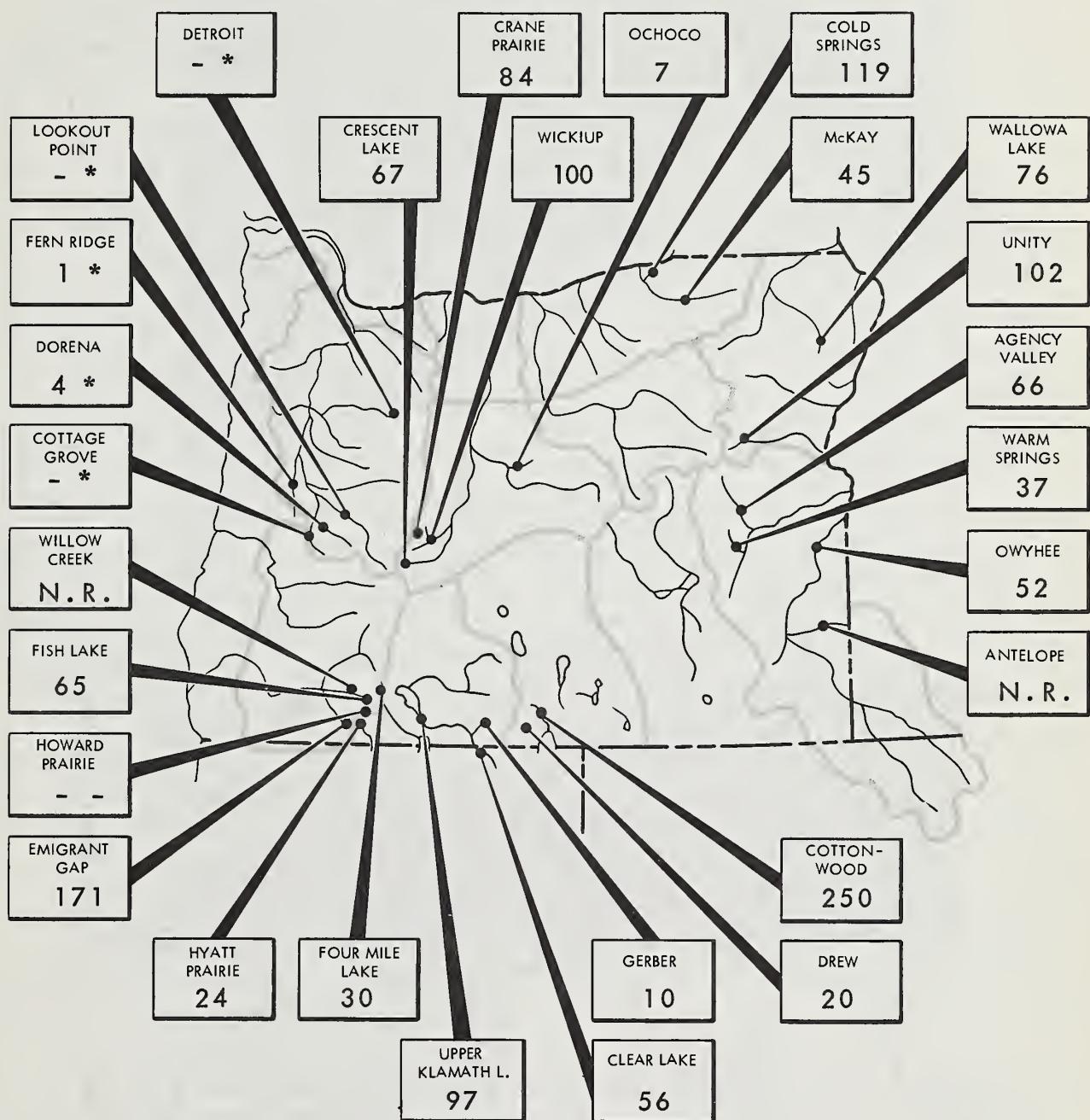
(1) From preliminary data furnished by U.S. Weather Bureau, Portland, Oregon.

(2) From preliminary data furnished by U.S. Geological Survey, Portland, Oregon.

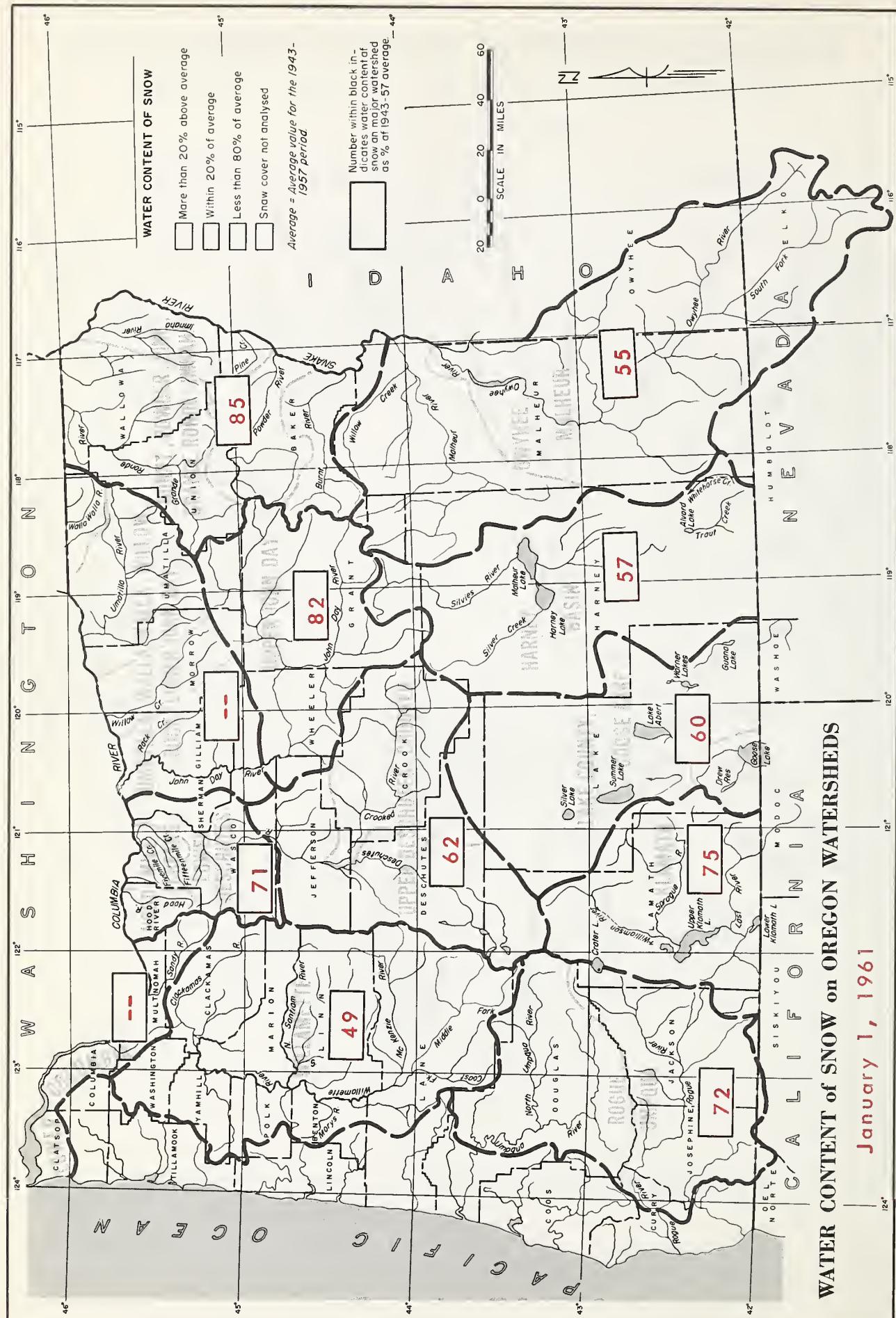


# STORAGE STATUS of OREGON RESERVOIRS as percent of 1943-57, 15 year average

January 1, 1961



\* - Multiple purpose reservoir - space reserved primarily for flood runoff.  
N.R. - No report.

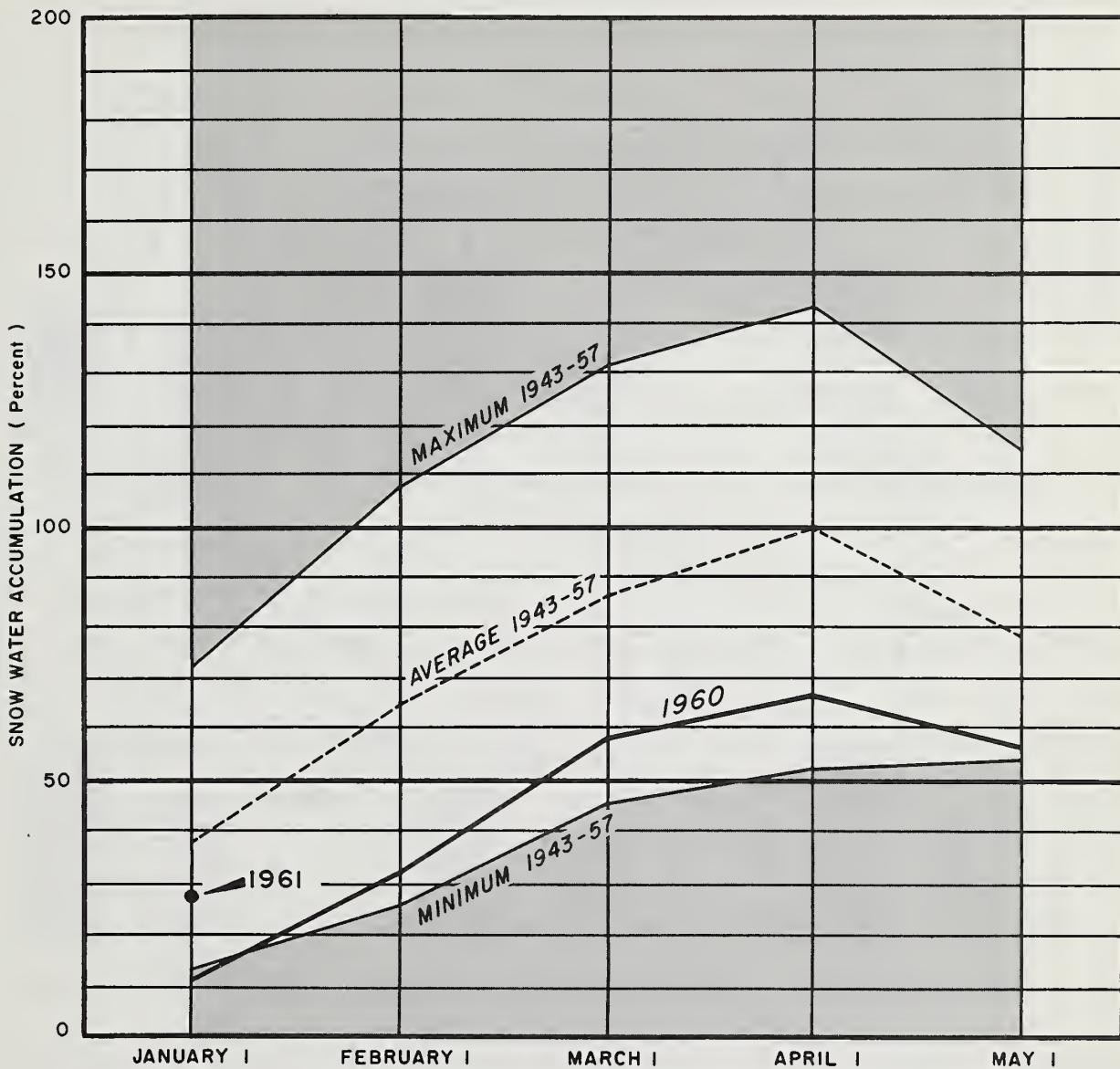


## WATER CONTENT of SNOW on OREGON WATERSHEDS

January 1, 1961

# SNOW WATER ACCUMULATION in OREGON

January 1, 1961

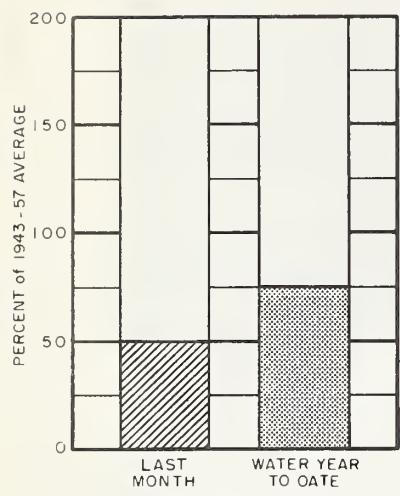


Snow accumulation in Oregon mountains usually reaches its peak by April 1st. Under average conditions about 37 percent of the total winter "snow crop" is on the ground by January 1. This year, current snow surveys indicate the 26 percent level has been reached. This is 11 percent short of the average but still better than the scanty 11 percent level reached on January 1st a year ago.

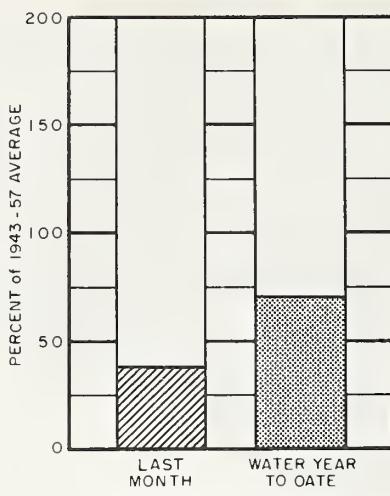
Storms and general weather conditions during the next 90 days can change this outlook considerably.

# CURRENT OREGON STREAMFLOW

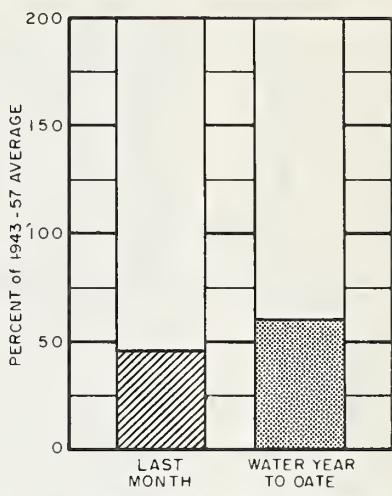
January 1, 1961



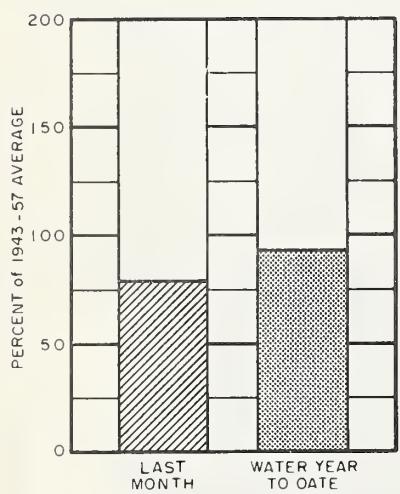
Owyhee Res. net inflow



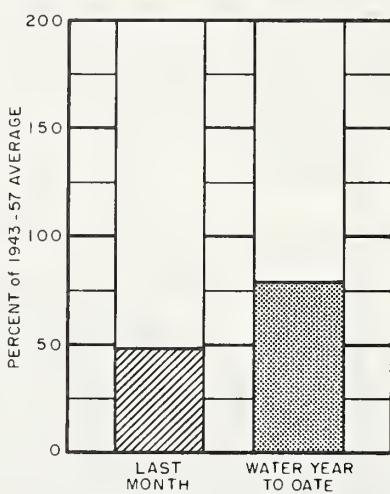
Umatilla near Umatilla



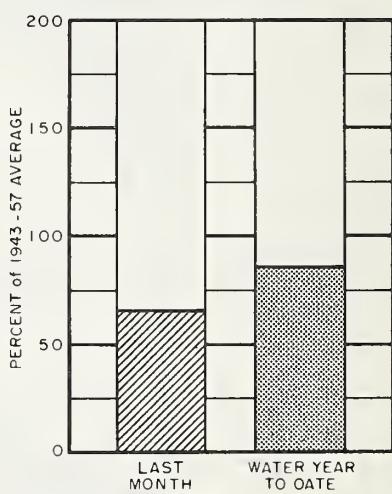
John Day at Service Creek



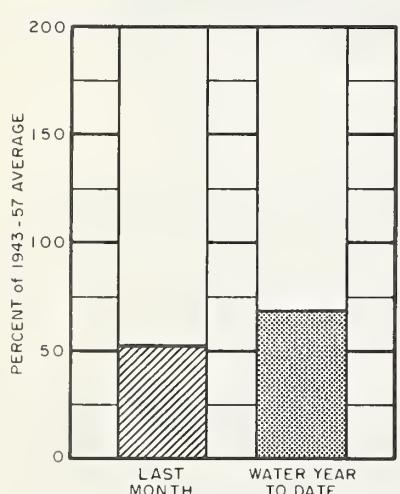
Deschutes at Moody



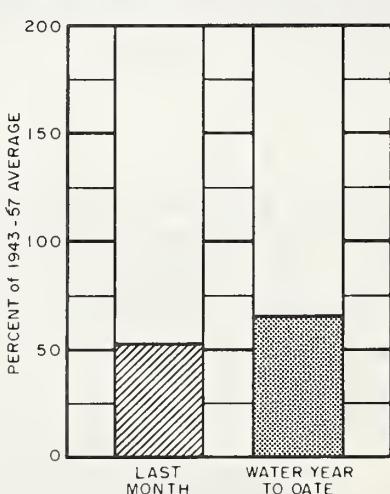
Hood and conduit near Hood River



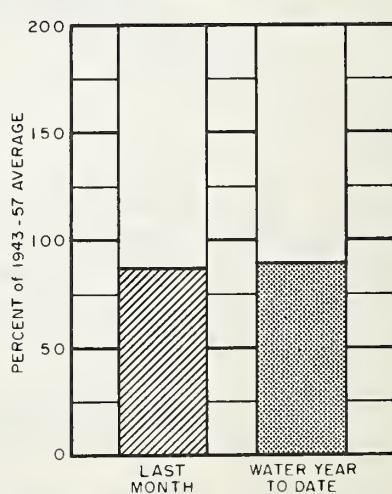
Mid. Fk. Willamette below No. Fk.



Umpqua near Elkton



Rogue at Raygold



Upper Klamath Lake net inflow

# VALLEY PRECIPITATION in OREGON <sup>a</sup>

January 1, 1961



PRECIPITATION as PERCENT of the 1943-57 AVERAGE

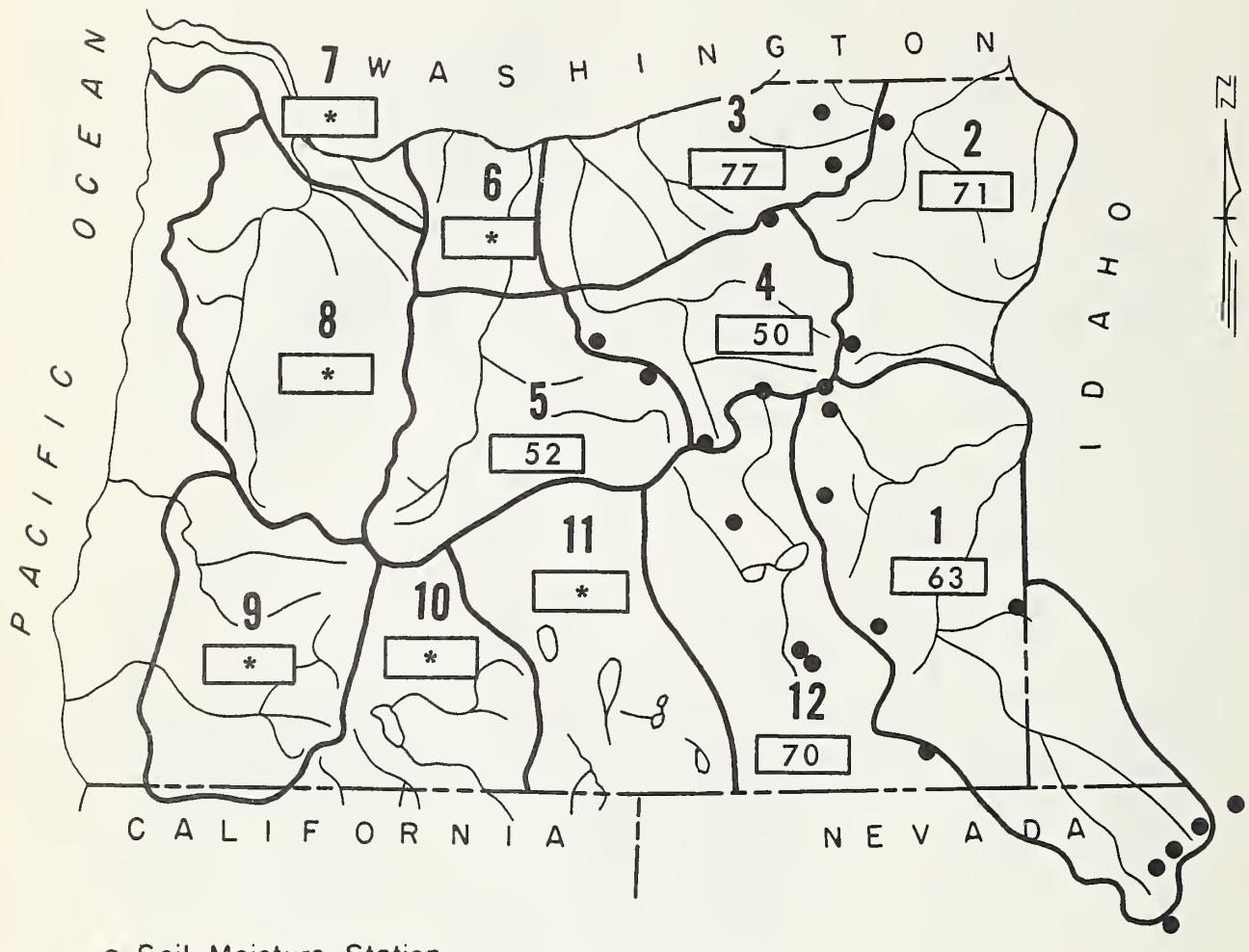
STATION	LAST MONTH	WATER YEAR TO DATE <sup>b</sup>	STATION	LAST MONTH	WATER <sup>b</sup> YEAR TO DATE
BAKER (KBKR)	64	116	LAKEVIEW	77	95
BEND	54	111	MEDFORD APT.	51	78
BURNS	45	77	NYSSA	41	86
ENTERPRISE	38	77	PENDLETON APT.	40	80
EUGENE APT.	45	94	PORTLAND APT.	45	86
HEPPNER	Report	Delayed	ROSEBURG APT.	36	84
JOHN DAY	60	91	SALEM APT.	49	87
KLAMATH FALLS	77	92	THE DALLES	61	95

(a) Preliminary data furnished by the U.S. Weather Bureau. (b) Oct. 1 to date. (c) Report delayed.

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# MOUNTAIN SOIL MOISTURE in OREGON as percent of available capacity

January 1, 1961



● Soil Moisture Station

\* *Moisture studies not yet developed in these areas.*

# WATER SUPPLY OUTLOOK OWYHEE, MALHEUR WATERSHEDS OREGON

*as of*  
**January 1, 1961**

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

## GENERAL OUTLOOK

The 1961 irrigation water supply outlook for Malheur County lands is considerably improved over the scrimpy outlook at this time last year but is still poor for most users this year. The lack of normal "carry-over" storage water in local reservoirs has a dimming effect on the outlook.

If it were not for the better snow cover and the newly "primed" surface of the soil mantle, this year's outlook would be worse than last year.

## SNOW COVER

Water content of the mountain snow pack is only 55 percent of the January 1 average, but it is 153 percent of last year's amount.

Snow accumulation in Malheur County watersheds usually reaches its peak by Mid-March or April 1st. Under average conditions about 42 percent of the total winter "snow crop" is on the ground by January 1. This year, current snow surveys indicate the 25 percent level has been reached. This is 17 percent short of the average but still better than the scanty 13 percent level reached on January 1st a year ago.

## SOIL-MOISTURE

Penetration of water into the soil mantle from the heavy November rains has reached from 12 to 24 inches in many areas. Although total moisture in the soil profile (upper 3 or 4 feet) is about the same as last year, it is more concentrated this year in the upper foot or two. This condition is favorable to a good runoff from snow-melt.

## RESERVOIR STORAGE

Total stored water in the Agency Valley and Warm Springs Reservoirs on the Malheur River is 82 percent of last year at this date and 46 percent of the 1943-57 average. Present storage in the Owyhee Reservoir is 93 percent of last year and 52% of average.

## STREAMFLOW

Inflow to Owyhee Reservoir since October 1st has been only 75 percent of average. Records show that inflow fell off to 50 percent of average during December. Expected streamflow during the irrigation season is likely to be deficient - but the outlook can be changed for better or worse during the next 90 days of winter weather.

*Report prepared by*

W.T. FROST AND BOB L. WHALEY

U.S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

209 S.W. FIFTH AVENUE - PORTLAND 4, OREGON

## WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair", "Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Boulder Creek		
Bully Creek		
Cow Creek		
Jordan Creek		
Jordan Valley Irrig. Dist.		
McDermitt Creek		
Oregon Canyon Creek		
Owyhee Project		
Sucker Creek		
Ten Mile Creek		
Vale, Oregon Irrig. Dist.		
Warmsprings Irrigation Dist.		
Willow Creek		
		Forecasts begin in the February 1 report which will reach you about February 9, 1961.

## RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	1943-57 AVERAGE
Agency Valley	60.0	15.5	16.1	23.6
Antelope	55.0	f	--	2.5
Owyhee	715.0	195.1	208.7	377.8
Warmsprings	191.0	20.4	27.4	55.2

## STREAMFLOW FORECASTS<sup>a</sup> (1,000 Ac. Ft.)

NO.	FORECAST POINT NAME	FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE	THIS YEAR AS PERCENT OF AVERAGE <sup>b</sup>	
					PERCENT OF AVERAGE	PERCENT OF AVERAGE
2140	Malheur near Drewsey	c	April-Sept.	81		
2175	Malheur, North Fork at Beulah <sup>d</sup>	c	April-Sept.	64		
1825	Owyhee Reservoir net Inflow <sup>g</sup>	c	April-Sept.	430		
			April-July	412		
			March-July	524		

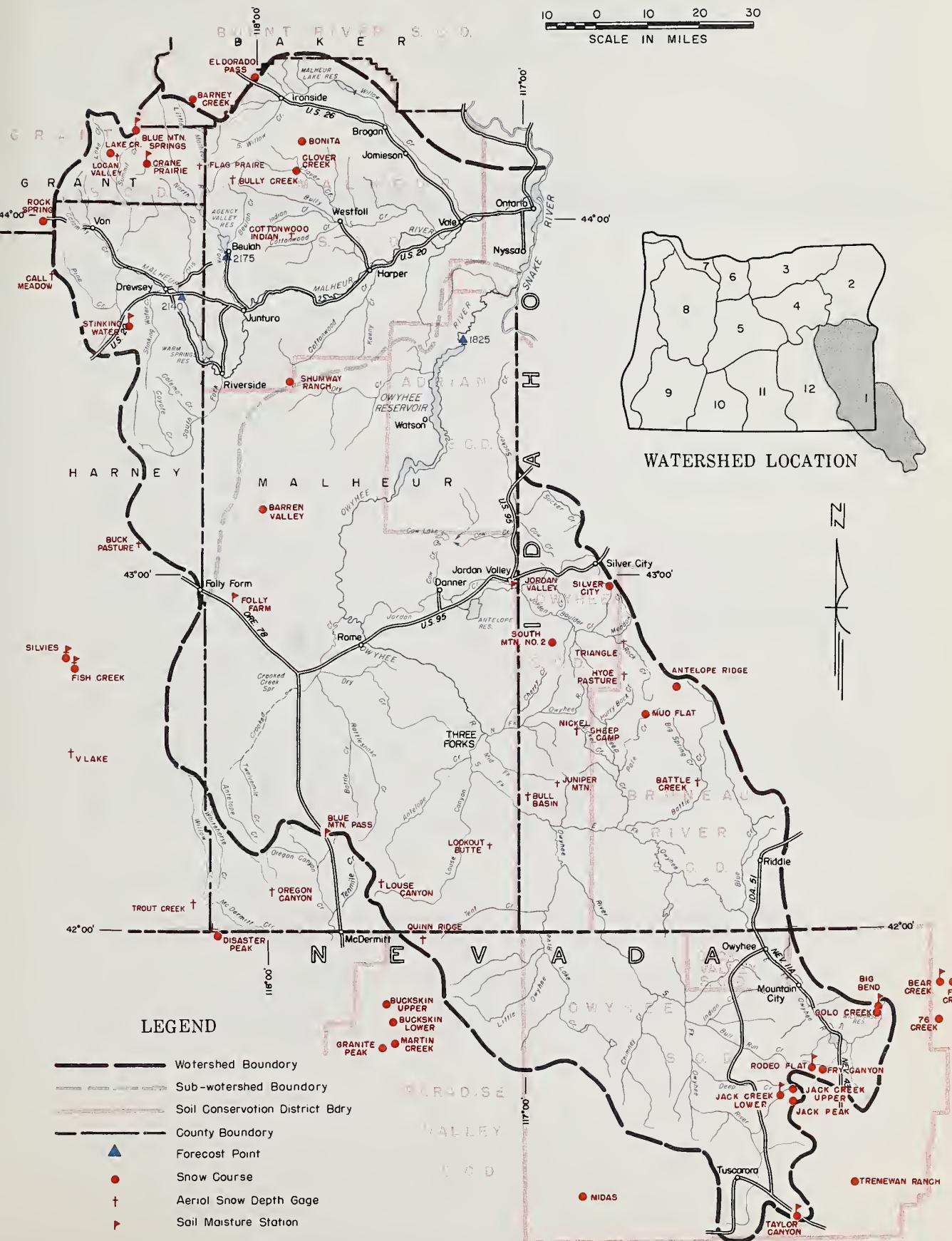
## AVAILABLE SOIL MOISTURE

STATION NAME	ELEVATION	DEPTH	PROFILE (Inches)	SOIL MOISTURE (Inches)			
				AVAILABLE CAPACITY	DATE	THIS YEAR	LAST YEAR
Big Bend (Nev.)	6700	48	9.6	12-29-60	7.3	8.6	9.0
Blue Mountain Springs	5900	42	12.0	10-14-60	1.3	--	7.8
Folly Farm	4450	36	8.3	12-15-60	5.5 <sup>i</sup>	5.3 <sup>i</sup>	4.6 <sup>i</sup>
Jack Creek, Lower (Nev.)	6800	48	4.9	12-30-60	3.8	3.3	4.4
Jordan Valley	4250	48	9.8	12-15-60	4.7	4.9	6.3
Rodeo Flat (Nev.)	6800	42	6.0	12-28-60	5.7	6.0	6.0
Stinking Water Summit	4800	48	11.7	12-15-60	11.0 <sup>i</sup>	10.6 <sup>i</sup>	11.1
Taylor Canyon (Nev.)	6200	48	9.7	12-30-60	6.4	6.2	6.7

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) USBR records of inflow. (h) Not surveyed. (i) Partly estimated.

# OWYHEE, MALHEUR WATERSHEDS

10 0 10 20 30  
SCALE IN MILES



# Owyhee, Malheur Watersheds

## SNOW

SNOW COURSE		CURRENT INFORMATION			PAST RECORD		
NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)	1943-57 AVERAGE	YEARS IN AVERAGE <sup>b</sup>
Antelope Ridge	5900	c					
Barney Creek	5950	c					
Battle Creek <sup>e</sup>	5700	c					
Bear Creek	7800	12/29	21	6.2	4.5	--	3
Big Bend	6700	12/29	13	2.5	1.4	--	2
Blue Mountain Springs	5900	12/28	24	5.8	1.1	6.9	14
Buckskin, Lower	6700	c					
Buckskin, Upper	7200	c					
Bull Basin <sup>e</sup>	5600	c					
Bully Creek <sup>e</sup>	5300	c					
Call Meadows <sup>e</sup>	5340	c					
Clover Creek	4100	1/2	0	0.0	--	--	1
Cottonwood-Indian <sup>e</sup>	4320	c					
Crane Prairie	5375	c					
Disaster Peak	6500	c					
Eldorado Pass	4600	1/2	0	0.0	0.9	--	2
Fish Creek <sup>e</sup>	7900	c					
Flag Prairie <sup>e</sup>	4750	c					
Fox Creek	6800	c					
Fry Canyon	6700	12/29	10	2.3	1.7	--	2
Gold Creek	6600	12/29	7	1.1	T	--	2
Granite Peak	7800	c					
Hyde Pasture <sup>e</sup>	5800	c					
Jack Creek, Lower	6800	12/30	6	1.5	1.0	--	2
Jack Creek, Upper	7250	12/29	14	3.0	1.8	--	2
Jack Peak	8420	c					
Juniper Mountain <sup>e</sup> (Red Canyon)	6500	c					
Lake Creek	5120	12/28	13	2.0	2.1	--	1
Logan Valley <sup>e</sup>	5100	c					
Lookout Butte <sup>e</sup>	5650	c					
Louse Canyon <sup>e</sup>	6440	c					
Martin Creek	6700	c					
Midas	7200	c					
Mud Flat	5500	c					
Oregon Canyon <sup>e</sup>	6950	c					
Quinn Ridge <sup>e</sup>	6300	c					
Riddle Creek <sup>e</sup> (Buck Pasture)	5700	c					
Rock Spring	5100	12/28	8	1.0	0.4	2.8	14
Rodeo Flat	6800	12/29	9	2.4	1.6	--	2
Silver City	6400	1/2	15	3.5	2.3	7.9	8
Silvies	6900	c					
South Mountain No. 2	6340	12/27	16	3.2	1.9	4.8	13
Stinking Water	4800	12/28	T	T	1.2	2.3	8
Taylor Canyon	6200	12/30	5	0.8	1.2	--	2
Tremewan Ranch	5700	12/29	T	T	T	--	2
Triangle <sup>e</sup>	5150	c					
Trout Creek <sup>e</sup>	7800	c					
76 Creek	7100	c					
"V" Lake <sup>e</sup>	6600	c					

# WATER SUPPLY OUTLOOK BURNT, POWDER, PINE, GRANDE RONDE, IMNAHA WATERSHEDS OREGON

*as of*  
January 1, 1961

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

## GENERAL OUTLOOK

The 1961 irrigation water supply outlook for northeastern Oregon is much better than last year's scanty outlook at this date. Snow measurements are nearer the 1943-57 average and watershed soils are in better conditions to aid in spring runoff.

## SNOW COVER

Snow cover at key stations in the northeastern corner of the state is about 85 percent of the January 1st average for the 1943-57 period. This is better than twice last year's figure at this time.

The water content of the snow pack usually reaches a maximum accumulation in this area by April 1st. On an average year four-tenths of this total should be on the ground by January 1st. This year, current snow surveys indicate that the 29 percent level has been reached. Although this is 11 percent below the average, it is 11 percent better than last year's scanty figure at this time.

## SOIL-MOISTURE

Soil moisture readings at stations on the perimeter of the area indicate that the soil mantle is at 71 percent of capacity. Although this is slightly less than last year at this time, the moisture is concentrated in the top one and one-half feet of the soil this year and will aid considerably in spring runoff.

## RESERVOIR STORAGE

Storage in Unity Reservoir is 102 percent of the January 1 average for the 1943-57 period and is nearly twice the storage it held at this time last year.

Wallowa Lake storage is 76 percent of average but is only 45 percent of the water stored at this time last year. Weather conditions during the next 90 days can have considerable effect on this outlook.

Report prepared by

W.T. FROST AND BOB L. WHALEY

U. S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE  
209 S.W. FIFTH AVENUE • PORTLAND 4, OREGON

# WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair",  
"Average" or "Excellent"

# RESERVOIR STORAGE (1,000 Ac. Ft.)

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Alder Slope		
Baker Valley		
Big Creek		
Clover Cr. (nr. N. Powder)		
Cove		
Durkee		
Eagle Valley		
Elgin		
Enterprise-Joseph		
Hereford-Bridgeport		
Imnaha River		
LaGrande-Island City		
Lostine-Wallowa		
N. Powder River-Wolf Cr.		
Pine Valley		
Powder River-Elk Creek		
Summerville		
Sumpter Valley		
Union-Hot Lake		
Unity		
	Forecasts begin in the February 1 report which will reach you about February 9, 1961.	

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	1943-57 AVERAGE
Unity	25.2	6.1	3.2	6.0
Wallowa Lake	37.5	12.0	26.7	15.8

# STREAMFLOW FORECASTS<sup>a</sup> (1,000 Ac. Ft.)

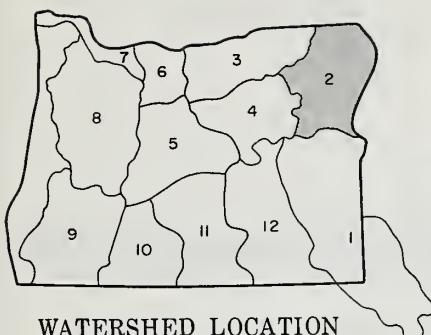
NO.	FORECAST POINT NAME	FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE	THIS YEAR AS PERCENT OF AVERAGE <sup>b</sup>
3305	Bear near Wallowa	c	April-Sept.	74	
2730	Burnt near Hereford <sup>d</sup>	c	April-Sept.	45	
3200	Catherine near Union	c	April-Sept.	73	
3190	Grande Ronde at La Grande	c	April-Sept.	202	
3295	Hurricane near Joseph	c	April-Sept.	49	
2920	Imnaha at Imnaha	c	April-Sept.	314	
3300	Lostine near Lostine	c	April-Sept.	133	
2755	Powder near Baker	c	April-Sept.	66	
3250	Wallowa, East Fork near Joseph <sup>d</sup>	c	April-July	65	
		c	April-Sept.	12.1	
		c	April-July	9.7	

# AVAILABLE SOIL MOISTURE

STATION	PROFILE (Inches)			SOIL MOISTURE (Inches)			
	NAME	ELEVATION	DEPTH	AVAILABLE CAPACITY	DATE	THIS YEAR	LAST YEAR
Blue Mountain Summit	5100	36	10.4	12-14-60	3.0	2.3	3.3
Emigrant Springs	3925	48	15.0	12-27-60	11.8	14.4	6.2
Tollgate	5070	48	17.8	12-27-60	15.9	16.3	17.2

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Water content partly estimated. (h) Not surveyed.

# BURNT, POWDER, PINE, GRANDE RONDE, IMNAHA WATERSHEDS



## WATERSHED LOCATION



## LEGEND

- Watershed Boundary
  - Sub-watershed Boundary
  - Soil Conservation District Bdry.
  - County Boundary
  - ▲ Forecast Point
  - Snow Course
  - ▶ Soil Moisture Station
  - + Aerial Snow Depth Gage

## Burnt, Powder, Pine, Grande Ronde, Imnaha Watersheds

## SNOW

SNOW COURSE		CURRENT INFORMATION			PAST RECORD		
		DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)	1943-57 AVERAGE	YEARS IN AVERAGE <sup>b</sup>
NAME	ELEVATION				LAST YEAR	1943-57 AVERAGE	YEARS IN AVERAGE <sup>b</sup>
Aneroid Lake No. 1	7480	c					
Aneroid Lake No. 2	7000	c					
Anthony Lake	7125	12/29	43	11.8	4.4	12.9	14
Bald Mountain <sup>e</sup> (Ore.)	6700	c					
Barney Creek	5950	c					
Beaver Reservoir	5340	12/30	19	4.3	1.9	4.8	14
Blue Mountain Summit	5098	12/28	17	3.1	0.8	4.3	15
Bourne	5800	c					
County Line	4800	12/30	13	2.7	0.8	3.0	6
Dooley Mountain	5430	12/27	14	2.9	1.3	4.0	15
Ellertson Meadows	5400	12/26	18	3.9	1.0	4.5	10
Eldorado Pass	4600	1/2	0	0.0	0.9	--	2
Gold Center	5340	c					
Goodrich Lake	6775	c					
Little Alps	6200	12/28	24	5.3	1.4	--	0
Lucky Strike	5050	c					
Meacham	4300	12/27	15	2.4	1.9	--	3
Moss Spring	5850	12/29	30	8.2	6.4	10.8	15
Schneider Meadows	5400	c					
Schoolmarm	4775	12/30	11	2.4	0.7	3.1	7
Standley <sup>e</sup>	7400	c					
Summit Springs	6000	c					
Taylor Green	5740	c					
Tipton	5100	12/27	22	4.6	1.4	4.2	5
Tollgate	5070	12/27	28	6.8	3.5	--	3

# WATER SUPPLY OUTLOOK

## UMATILLA, WALLA WALLA, WILLOW, ROCK, LOWER JOHN DAY WATERSHEDS

### OREGON

*as of*  
January 1, 1961

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

**GENERAL OUTLOOK** - The 1961 irrigation water supply outlook for this area is much better than the scanty outlook on January 1 a year ago. Snow cover is much better than a year ago at this date and soil moisture conditions are more favorable to good spring runoff over most of the area.

**SNOW COVER** - Snow measurements taken near January 1st show almost twice the water content this year compared with January 1 a year ago. This is still slightly below the average for the short number of years these courses have been measured on January 1.

Snow accumulation in these watersheds usually reaches its peak by April 1st. Under average conditions about 29 percent of the total winter "snow crop" is on the ground by January 1. This year, current snow surveys indicate the 22 percent level has been reached. This is 7 percent short of the average but still better than the scanty 13 percent level reached on January 1st a year ago.

**SOIL-MOISTURE** - Fall rains have penetrated most of the upper watershed soils to a depth of 18 or 20 inches. Although the total moisture in the soil profile is about the same as last year, this year's soil-moisture is concentrated nearer the surface, making conditions more favorable for spring runoff.

Moisture in the soil mantle now averages 77 percent of its available capacity as measured in mid-December and later measurements will be taken to indicate any change during the remaining winter months.

**RESERVOIR STORAGE** - Storage in the two major irrigation reservoirs of the area varies from a little better than average in Cold Springs to slightly less than half average in McKay. As a percent of the 1943-57 average, they are 119 and 45 respectively.

**STREAMFLOW** - Less than average precipitation in the area during October and December has resulted in well below normal streamflow for those months and even though November was well above average, it still has not made up the deficit in the average since October 1. The flow of the Umatilla near Umatilla\* has averaged 70 percent of normal since October 1st and December flow was a scanty 37 percent of the 1943-57 normal.

\*Preliminary data furnished by U.S. Geological Survey, Portland, Oregon

## WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair",  
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Birch Creek		
Butter Creek		
Dry Creek		
Dugger Creek		
Johnson Creek		
McKay Creek		
Mill Creek		
Mud Creek		
Pine Creek		
Rhea Creek		
Rock Creek		
Umatilla River (Cold Springs Res.)		
Umatilla River, Main		
Umatilla River (McKay Res.)		
Walla Walla River, Little		
Walla Walla River, Main		
Walla Walla River, N. Fork		
Walla Walla River, S. Fork		
Willow Creek		
	Forecasts begin in the February 1 report which will reach you about February 9, 1961.	

## RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	1943-57 AVERAGE
Cold Springs	50.0	24.0	27.3	20.2
McKay	73.8	11.8	11.9	26.0

## STREAMFLOW FORECASTS<sup>a</sup> (1,000 Ac. Ft.)

NO.	NAME	FORECAST POINT	FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE		THIS YEAR AS PERCENT OF AVERAGE <sup>b</sup>
					FORECAST THIS YEAR	1943-57 AVERAGE	
0225	McKay near Pilot Rock			April-Sept.	31		
0200	Umatilla near Gibbon			April-July	31		
0210	Umatilla at Pendleton			April-Sept.	96		
0100	Walla Walla, South Fork near Milton			April-Sept.	187		
				April-July	182		
				April-Sept.	76		
				April-July	62		

## AVAILABLE SOIL MOISTURE

STATION	PROFILE (Inches)			SOIL MOISTURE (Inches)			
	DEPTH	AVAILABLE CAPACITY	DATE	THIS YEAR	LAST YEAR	2 YEARS AGO	
Athena-Weston	1700	48	11.8	12-28-60	7.2	5.5	4.2
Battle Mountain Summit	4340	48	8.0	12-28-60	5.8	4.4	2.6
Emigrant Springs	3925	48	15.0	12-27-60	11.8	14.4	6.2
Tollgate	5070	48	17.8	12-27-60	15.9	16.3	17.2

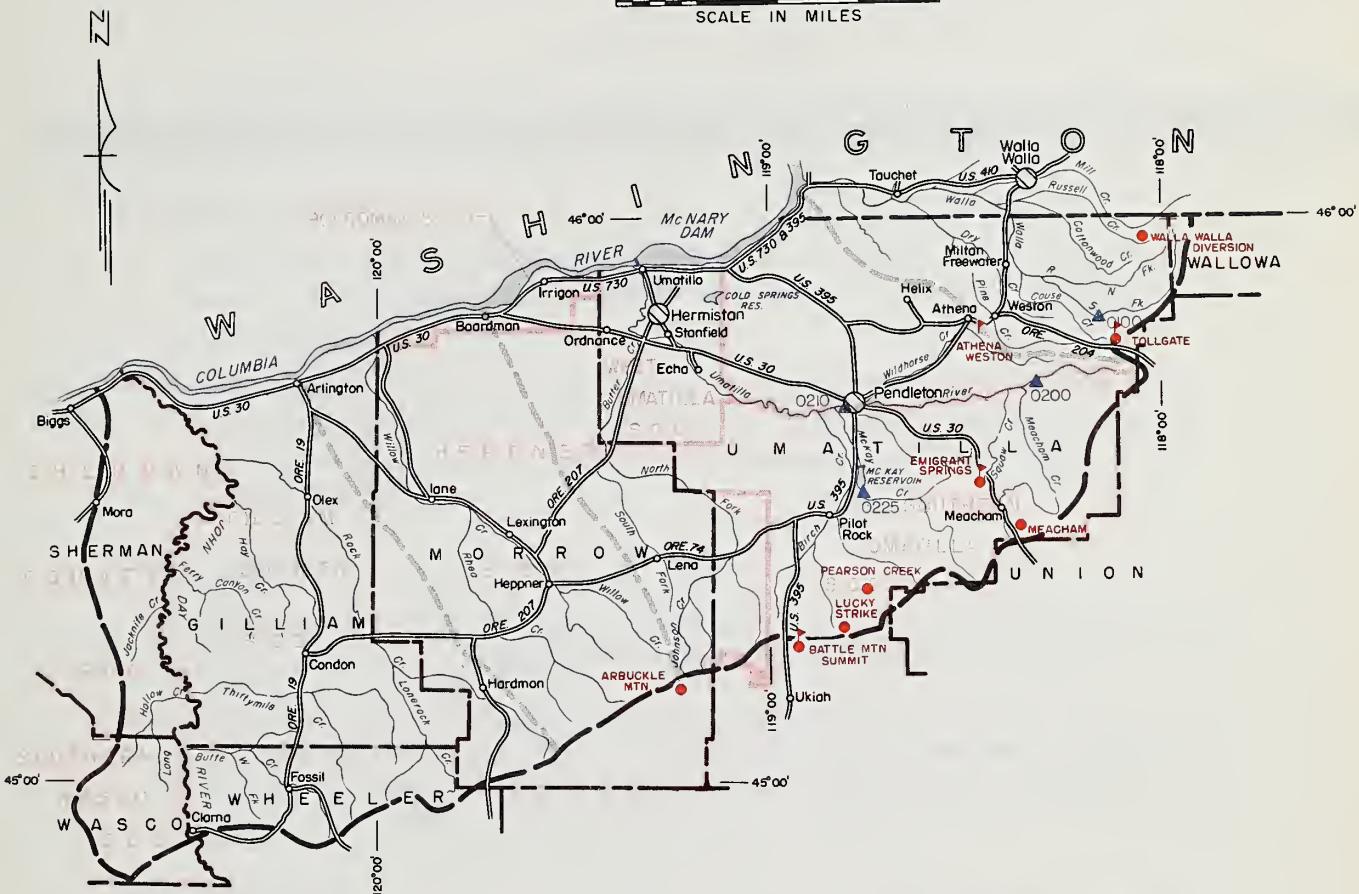
## SNOW

SNOW COURSE	CURRENT INFORMATION			PAST RECORD		
	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)	1943-57 AVERAGE	YEARS IN AVERAGE
NAME	ELEVATION		LAST YEAR			
Arbuckle Mountain	5400	c				
Battle Mountain Summit	4340	12/28	17	3.1	0.8	--
Emigrant Springs	3925	12/27	8	1.5	1.0	--
Lucky Strike	5050	c				3
Meacham	4300	12/27	15	2.4	1.9	--
Pearson Creek	3000	c				3
Tollgate	5070	12/27	28	6.8	3.5	--

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed.

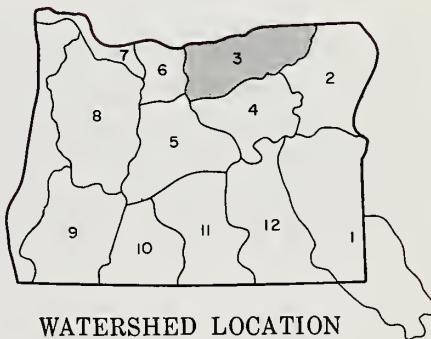
# UMATILLA, WALLA WALLA, WILLOW, ROCK, LOWER JOHN DAY WATERSHEDS

10 0 10 20 30  
SCALE IN MILES



## LEGEND

- Watershed Boundary
- Sub-watershed Boundary
- Soil Conservation District Bdry.
- County Boundary
- ▲ Forecast Point
- Snow Course
- Soil Moisture Station



WATERSHED LOCATION

**Umatilla, Walla Walla, Willow, Rock, Lower John Day Watersheds**

*"The Conservation of Water begins with the Snow Survey"*

# WATER SUPPLY OUTLOOK UPPER JOHN DAY WATERSHEDS OREGON

*as of*  
**January 1, 1961**

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

## GENERAL OUTLOOK

The 1961 irrigation water supply outlook for the Upper John Day area is considerably better than on January 1st last year but is still somewhat below average.

Water users in this area must depend on natural streamflow for their water supplies since there are no sizable reservoirs to store water for late season use. Current observations point toward summer flows more adequate than for the last two years.

## SNOW COVER

Water content of the mountain snow cover is two and one-half times greater than last year on January 1st but is only 82 percent of the 1943-57 average.

Under average winter conditions 43 percent of the total winter's "snow crop" is on the ground by January 1. This year 34 percent has been measured to date but the three remaining winter months can bring major changes in this outlook.

## SOIL-MOISTURE

Precipitation remained far below average until November when heavy rains really began to penetrate the dust-dry soils of the upper watersheds. Water has now penetrated the soils from 18" to 20" in the higher areas although the top 4 feet of soil still contains only 50 percent of its capacity. In some lower areas moisture has penetrated only 12 inches. In contrast with the previous 2 years, soil-moisture conditions are now favorable to a good runoff from snowmelt next spring.

## STREAMFLOW

Flow of the John Day River as measured at Service Creek\* has been only 60 percent of the 1943-57 average since October 1st. Not even the heavy November rains could bring the flow up to normal.

\*Preliminary data furnished by U. S. Geological Survey, Portland, Oregon

# WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair"  
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Beech Creek		
Beech Creek-Fox-Long Cr.		
Bridge-Mountain Creeks		
Camas Creek		
Cherry Creek		
Indian-Pine Creeks		
John Day River, Main Fork		
John Day River, Mid. Fork		
John Day River, N. Fork		
John Day River, S. Fork		
Monument-Kimberly		
Strawberry Creek		

# RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	1943-57 AVERAGE

# STREAMFLOW FORECASTS<sup>a</sup> (1,000 Ac. Ft.)

NO	FORECAST POINT NAME	DEPTH	AVAILABE CAPACITY	DATE	THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE	THIS YEAR AS PERCENT OF AVERAGE <sup>b</sup>
							FORECAST THIS YEAR	
0385	John Day at Prairie City	c		April-Sept.		54		
0440	John Day, Middle Fork at Ritter	c		April-July		49		
0375	Strawberry near Prairie City	c		April-Sept.		135		
				April-Sept.		9.1		

# AVAILABLE SOIL MOISTURE

STATION	PROFILE (Inches)			SOIL MOISTURE (Inches)			LAST YEAR	2 YEARS AGO
	NAME	ELEVATION	DEPTH	AVAILABLE CAPACITY	DATE	THIS YEAR		
Battle Mtn. Summit	4340	48	8.0	12-28-60	5.8	4.4	2.6	
Blue Mtn. Springs	5900	42	12.0	10-14-60	1.3	--	7.8	
Blue Mtn. Summit	5100	36	10.4	12-14-60	3.0	2.3	3.3	
Derr	5670	24	6.0	c				
Marks Creek	4540	36	8.3	12-28-60	4.3	5.6	3.2	
Snow Mtn.	6300	48	10.4	c				
Starr Ridge	5150	36	6.1	12-14-60	3.3	4.9	--	

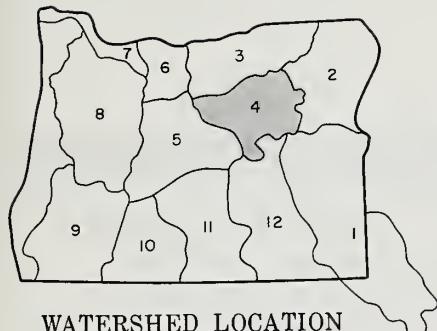
# SNOW

SNOW COURSE	CURRENT INFORMATION			PAST RECORD			YEARS IN AVERAGE <sup>b</sup>	
	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches) LAST YEAR	1943-57 AVERAGE	
Anthony Lake	7125	12/28	43	11.8	4.4	12.9		14
Arbuckle Mountain	5400	c						
Battle Mountain Summit	4340	12/28	T	T	0.8	--		0
Beech Creek Summit	4800	12/27	6	1.3	1.2	2.5		5
Blue Mountain Spring	5900	12/28	24	5.8	1.1	6.9		14
Blue Mountain Summit	5098	12/28	17	3.1	0.8	4.3		15
Derr	5670	c						
Dixie Springs	6650	c						
Gold Center	5340	c						
Indian Creek Butte <sup>e</sup>	6550	c						
Izee Summit	5293	12/27	13	2.6	0.9	4.8		5
Lucky Strike	5050	c						
Marks Creek	4540	12/28	4	1.0	0.4	--		3
Ochoco Meadows	5200	c						
Olive Lake	6000	12/27	33	7.8	4.2	8.6		14
Schoolmarm	4775	12/30	11	2.4	0.7	3.1		7
Snow Mountain	6300	c						
Starr Ridge	5150	12/27	9	2.0	1.3	3.2		5
Tipton	5100	12/27	22	4.6	1.4	4.2		5
Williams Ranch	4500	c						

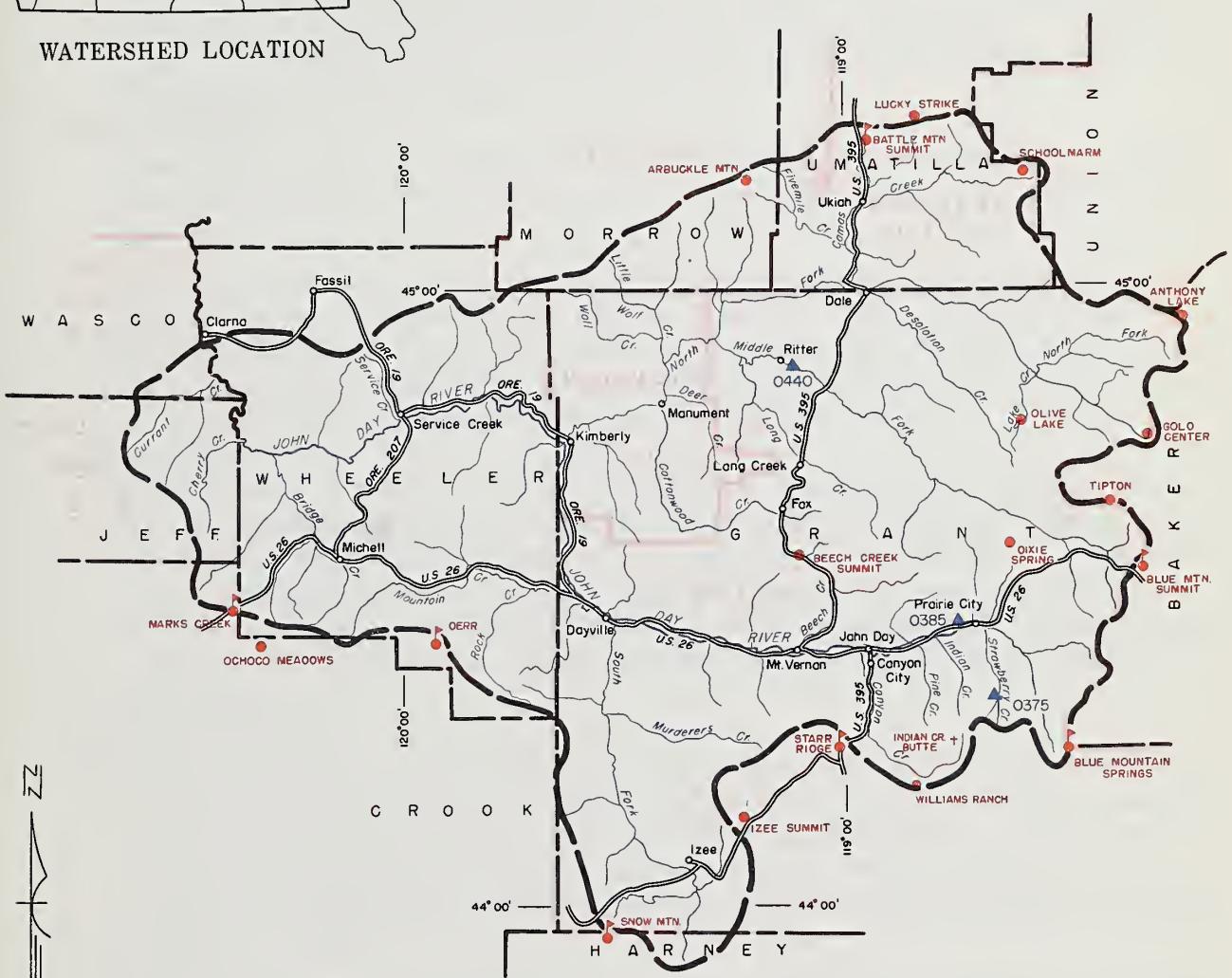
(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Not surveyed.

# UPPER JOHN DAY WATERSHEDS

10 0 10 20 30  
SCALE IN MILES



WATERSHED LOCATION



## LEGEND

- Watershed Boundary
- Sub-watershed Boundary
- County Boundary
- Soil Conservation District Bdry.
- ▲ Forecast Point
- Snow Course
- Soil Moisture Station
- + Aeriel Snow Depth Gage



# WATER SUPPLY OUTLOOK UPPER DESCHUTES, CROOKED WATERSHEDS OREGON

*as of*  
January 1, 1961

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE. OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

## GENERAL OUTLOOK

The 1961 irrigation water supply outlook for the Deschutes River system is better than last year at this time although still below average. The Crooked River outlook is somewhat improved over last year's poor outlook at this time but only if subsequent winter storms improve the snow pack.

## SNOW COVER

Snow surveys made about January 1st reveal about two and one-half times as much water as last year at this time, but this is still only 62 percent of the 1943-57 average.

The maximum snow accumulation is generally reached in this area on April 1st. Under average conditions about 37 percent of the total "snow crop" is on the ground by January 1. This year, current snow surveys indicate the 22 percent level has been reached. This is 13 percent better than last year at this time but is still 15 percent short of the average for this time of year.

## SOIL-MOISTURE

Watershed soils in this area are in slightly better condition to aid in spring runoff this year even though the total moisture in the profile is a little less. Heavy November rainfall penetrated the top 18 to 20 inches of the soil mantle in forested areas and as much as 30 inches in the more open areas. This year's moisture, being concentrated closer to the surface, should aid in snow-melt "payoff" if winter storms in the next 90 days are heavy enough to make a closer to normal snow pack before runoff begins.

## RESERVOIR STORAGE

The three reservoirs on the Deschutes proper are now 89 percent of their 1943-57 average storage for January 1st. Ochoco Reservoir, however, is less than 1 percent of average with 1,500 acre feet. This is slightly less than half the water stored at this time last year in this reservoir. Some water is now being stored in the new Crooked River Reservoir but diversions and canals are not yet completed for use of this water this year.

## STREAMFLOW

Flow of the Deschutes at Moody\* has been near normal since October 1. November was slightly above normal but October and December were both below, making the fall flow since October 1st 92 percent of average.

\*Preliminary data furnished by U.S. Geological Survey, Portland, Oregon

**WATER SUPPLY OUTLOOK** expressed as "Poor", "Fair",  
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Arnold Irrigation District		
Bear Creek		
Beaver Creek		
Camp Creek		
Central Oregon Irrig. Dist.		
Crooked River		
Deschutes River		
Hay-Trout Creeks		
Lone Pine Irrig. Dist.		
Mill Creek		
North Unit Irrig. Dist.		
Ochoco Creek		
Sisters Irrigation Dist.		
Snow Creek Irrig. Dist.		
Squaw Creek Irrig. Dist.		
Swalley Ditch		
Tumalo Project		
Walker Basin Irrig. Dist.		
	Forecasts begin in the February 1 report which will reach you about February 9, 1961.	

**RESERVOIR STORAGE (1,000 Ac. Ft.)**

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	1943-57 AVERAGE
Crane Prairie	55.3	29.7	33.5	35.5
Crescent Lake	117.2	29.2	42.6	43.6
Ochoco	47.5	1.5	3.2	21.1
Wickiup	182.0	102.2	97.9	102.0

Note: The U. S. Bureau of Reclamation indicates that dead storage in the amount of 5360 acre feet may be included in the current storage figure for Crescent Lake.

**STREAMFLOW FORECASTS<sup>a</sup> (1,000 Ac. Ft.)**

NO.	FORECAST POINT NAME	FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE		THIS YEAR AS PERCENT OF AVERAGE <sup>b</sup>
				FORECAST THIS YEAR	1943-57 AVERAGE	
0535	Crane Prairie Reservoir total inflow	c	April-Sept.	143		
0600	Crescent at Crescent Lake <sup>d</sup>	c	April-Sept.	31		
0795	Crooked near Post	c	April-Sept.	129		
0645	Deschutes at Benham Falls <sup>d</sup>	c	April-Sept.	602		
			April-July	404		
0500	Deschutes below Snow Creek	c	April-Sept.	74		
0630	Deschutes, Little near Lapine <sup>d</sup>	c	April-Sept.	113		
			April-July	100		
0848	Ochoco Reservoir net Inflow	c	April-Sept.	32		
0555	Odell near Crescent	c	April-Sept.	34		
0750	Squaw near Sisters	c	April-Sept.	55		
0730	Tumalo near Bend <sup>d</sup>	c	April-Sept.	55		

**AVAILABLE SOIL MOISTURE**

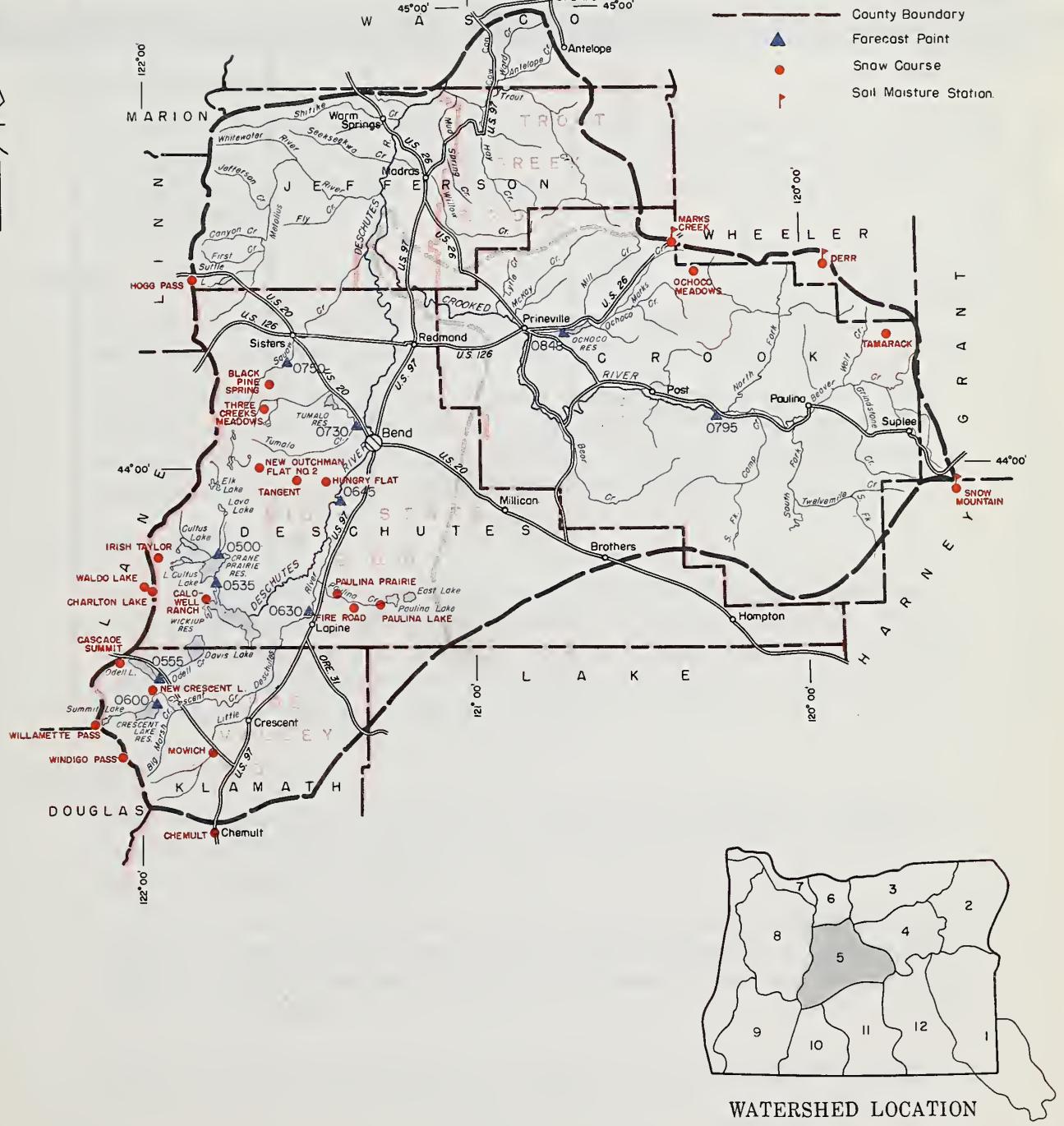
STATION	PROFILE (Inches)			SOIL MOISTURE (inches)		
	DEPTH	AVAILABLE CAPACITY	DATE	THIS YEAR	LAST YEAR	2 YEARS AGO
NAME	ELEVATION					
Derr	5670	24	6.0	c		
Marks Creek	4540	36	8.3	12-28-60	4.3	5.6
Snow Mountain	6300	48	10.4	c		3.2

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed.

## UPPER DESCHUTES, CROOKED WATERSHEDS

10 0 10 20 30  
SCALE IN MILES

## LEGEND



#### WATERSHED LOCATION

**Upper Deschutes, Crooked Watersheds**

**SNOW**

SNOW COURSE		CURRENT INFORMATION			PAST RECORD		
NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches) LAST YEAR	1945-57 AVERAGE	YEARS IN AVERAGE <sup>b</sup>
Black Pine Spring	4600	c					
Caldwell Ranch	4400	c					
Cascade Summit	4880	12/29	26	8.7	5.1	15.6	9
Charlton Lake	5750	c					
Chemult	4760	12/28	12	4.4	1.6	5.8	14
Derr	5670	c					
Fire Road	5050	c					
Hogg Pass	4755	12/27	37	11.6	2.7	18.4	15
Hungry Flat	4400	c					
Irish-Taylor	5500	c					
Marks Creek	4540	12/28	4	1.0	0.4	--	3
Mowich	4700	c					
New Crescent Lake	4800	c					
New Dutchman Flat No. 2	6400	c					
Ochoco Meadows	5200	c					
Paulina Lake	6330	c					
Paulina Prairie	4285	c					
Snow Mountain	6300	c					
Tamarack	4800	c					
Tangent	5400	c					
Three Creeks Butte	5200	c					
Three Creeks Meadows	5600	c					
Waldo Lake	5500	c					
Willamette Pass	5600	c					
Windigo Pass	5800	c					

# WATER SUPPLY OUTLOOK HOOD, MILE CREEKS, LOWER DESCHUTES WATERSHEDS OREGON

*as of*  
**January 1, 1961**

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

## GENERAL OUTLOOK

The 1961 irrigation water supply outlook for the Hood River Valley and Wasco County area is considerably better than the poor outlook forecast a year ago at this date. This outlook is based upon current snow surveys and soil-moisture measurements.

## SNOW COVER

The water content of the mountain snow cover is 4-1/2 times greater than on January 1st a year ago but is still only 71 percent of the 1943-57 average.

Under average winter conditions there is usually 38 percent of the total winter's "snow crop" on the ground by January 1st. This year there is 27 percent of the total already accounted for but the three remaining winter months can bring a considerable change in the outlook.

## SOIL-MOISTURE

Precipitation remained far below average until November when heavy rains really began to penetrate the dust-dry soils of the upper watersheds. Water has now penetrated some of the valley soils more than 48 inches. In contrast with the previous two years, the soil-moisture conditions are now favorable to a good runoff from snow-melt next spring.

## STREAMFLOW

Flow of the Hood River\* has been 79 percent of the 1943-57 average since October 1st. The heavy November rains brought streamflow up to 131 percent of average in that month.

Since there are few sizable reservoirs to store water for late season use, most water users in this area must depend upon natural streamflow for their water supplies. Current observations point toward summer flows more adequate than for the last two years.

\*Preliminary data furnished by U.S. Geological Survey, Portland, Oregon

Report prepared by	W.T. FROST AND BOB L. WHALEY
U.S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE	
209 S.W. FIFTH AVENUE - PORTLAND 4, OREGON	

# WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair",  
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Aldridge Ditch		
Badger Creek		
Dee Irrigation District		
East Fork Irrig. Dist.		
Farmers Irrig. Dist.		
Glacier Irrig. Dist.		
Hood River Irrig. Dist.		
Juniper Flat		
Middle Fork Irrig. Dist.		
Mile Creeks		
Mill Creek		
Mount Hood Irrig. Dist.		
Rock-Gate-Threemile Crs.		
Tygh Creek		
White River		

# RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	1943-57 AVERAGE

# STREAMFLOW FORECASTS<sup>a</sup> (1,000 Ac. Ft.)

NO.	NAME	FORECAST POINT	FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE	THIS YEAR AS PERCENT OF AVERAGE <sup>b</sup>
1210	Hood near Hood River <sup>d</sup>		c	April-Sept. April-July	365 311	
1185	Hood, West Fork near Dee		c	April-Sept. April-July	174 151	
1015	White below Tygh Valley		c	April-Sept. April-July	178 161	

# SNOW

SNOW COURSE	CURRENT INFORMATION			PAST RECORD				
	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches) LAST YEAR	1943-57 AVERAGE	YEARS IN AVERAGE <sup>b</sup>
Brooks Meadows	4300	c						
Clear Lake	3500	12/28	5	2.0	0.2	--		0
Clear Lake Experimental	3500	12/28	14	4.3	0.5	--		0
Cooper Spur	3490	12/30	9	2.4 <sup>g</sup>	--	--		0
Greenpoint Reservoir	3400	c						
Knebal Springs	3850	c						
Parkdale	1770	12/30	0.6	0.2	--	--		0
Phlox Point	5600	12/28	58	21.5	5.3	26.8		13
Red Hill	4400	c						
Still Creek	3700	12/28	16	5.8	1.2	11.4		12
Tilly Jane	6000	c						
Ulrich Ranch Junction	3350	c						
Upper Valley	2530	12/30	2	0.6	--	--		0

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Partly estimated.

## HOOD, MILE CREEKS, LOWER DESCHUTES WATERSHEDS

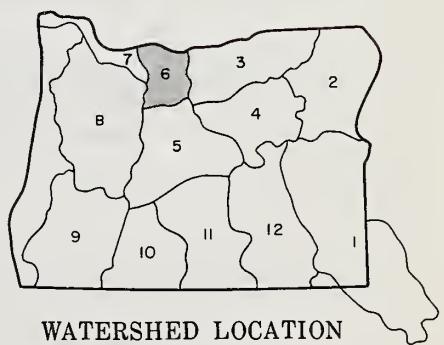
10 0 10 20  
SCALE IN MILES



## LEGEND

- The legend includes the following entries:

  - Watershed Boundary (black line)
  - Sub-watershed Boundary (light gray line)
  - Soil Conservation District Bdry. (pink line)
  - County Boundary (black line)
  - Forecast Point (blue triangle)
  - Snow Course (red circle)



### WATERSHED LOCATION



# WATER SUPPLY OUTLOOK LOWER COLUMBIA WATERSHEDS OREGON

*as of*  
**January 1, 1961**

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

## GENERAL OUTLOOK

The 1961 water supply outlook for the flow of the Columbia River near The Dalles is for below normal spring and summer flow.

## SNOW COVER

Key snow courses in the United State's portion of the Columbia Basin measured near the first of January indicate well below normal snowfall throughout the entire basin. The northern rivers which usually contribute so heavily to the flow of the Columbia River are following the same below normal pattern as the Snake River for 1961.

Canadian snow cover is probably below normal at this time.

## SOIL-MOISTURE

Heavy rains during the latter part of November partially alleviated the dry soil conditions throughout the Columbia Basin. Various measurements of soil moisture stations indicate that the entire basin is again below or close to normal except in the very northern portion of the Columbia River in British Columbia.

The southern half of the basin in Oregon, Idaho, and eastern Wyoming, is variable in soil moisture status but generally has dry soil beneath the top foot or two. Dry soil conditions are expected to reduce the flow lower than the light snow pack indicates.

## STREAMFLOW

Flow of the Columbia River near The Dalles\* has been near normal so far this water year.

<u>Month</u>	<u>Percent of Normal Discharge (1943-57)</u>
October	103 adjusted for storage
November	107      "      "      "
December	82      "      "      "

\*From preliminary data furnished by U.S. Geological Survey, Portland, Oregon

# STREAMFLOW FORECASTS<sup>a</sup>(1,000 Ac. Ft.)

FORECAST POINT		FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE	THIS YEAR AS PERCENT OF AVERAGE <sup>b</sup>
NO.	NAME				
1057	Columbia at The Dalles	c	April-Sept. April-June	106,100 72,000	

## HISTORICAL DATA (Columbia River at The Dalles)

YEAR	STREAMFLOW <sup>c</sup> (1,000 A.F.)			PEAK <sup>e</sup> (1,000 cfs)	DATE
	APR.—SEPT.	APR.—JUNE	MAY—JUNE		
1943	115,000	75,300	52,400	541	June 21
1944	61,900	39,200	32,100	326	June 19
1945	81,600	54,600	47,300	505	June 8
1946	108,100	75,400	59,600	581	May 30
1947	100,300	70,000	56,800	536	May 11
1948	130,500	94,600	81,900	999	May 31
1949	95,700	71,400	56,000	622	May 18
1950	120,400	74,700	61,200	744	June 25
1951	113,000	75,600	59,100	597	May 26
1952	107,700	77,500	57,300	557	May 28
1953	100,600	64,900	55,800	609	June 17
1954	119,500	70,500	59,300	561	May 23
1955	99,500	58,300	50,300	545	June 26
1956	131,400	96,900	75,800	815	June 3
1957	105,700	80,500	67,200	700	May 22
1943-57 Avg.	106,100	72,000	58,100	616	
1958	97,700	72,000	58,600	593	May 31
1959	112,500	71,900	58,900	555	June 23

## LOWER COLUMBIA RIVER FLOOD STAGES (with 9.5' tide at Astoria) <sup>f</sup>

VANCOUVER <sup>g</sup> GAGE (Weather Bu.)	FLOW AT THE DALLES (1,000 c.f.s.)	DRAINAGE DISTRICT PUMPHOUSE						
		SANDY	SAUVIE ISL.	SCAPPOOSE	DEER ISL.	RAINIER	BEAVER	WOODSON
		RIVER MILES						
35 (1894)	1210	41.2	34.2	33.3	28.5	21.9	17.5	15.5
34	1160	40.5	33.5	32.5	27.7	21.2	17.0	15.0
33	1100	39.6	32.4	31.4	26.7	20.2	16.1	14.3
32	1050	38.9	31.5	30.5	25.7	19.5	15.4	13.7
31 (1948)	1000	38.0	30.7	29.5	25.1	18.8	14.7	13.0
30	940	36.6	29.5	28.5	24.3	18.1	14.0	12.4
29	890	35.5	28.5	27.7	23.7	17.5	13.4	11.8
28	840	34.3	27.5	26.7	22.8	17.0	13.0	11.4
27 (1956)	790	33.0	26.5	25.6	21.8	16.2	12.5	11.0
26 (1950)	750	32.1	25.5	24.6	20.9	15.5	12.2	10.7
25	700	30.7	24.2	23.2	19.7	14.6	11.7	10.3
24	660	29.7	23.0	22.2	19.0	14.1	11.4	10.2
23	630	29.0	22.3	21.4	18.4	13.6	11.2	10.0
22	590	28.1	21.4	20.3	17.2	13.0	10.9	9.7
21	560	27.2	20.7	19.5	16.4	12.6	10.6	9.6
20	530	26.2	19.8	18.6	15.5	12.1	10.2	9.4
19	510	25.5	19.2	18.0	15.0	11.8	10.0	9.3
18	480	24.4	18.3	17.2	14.3	11.4	9.8	9.1
17	450	23.4	17.4	16.4	13.7	11.0	9.6	8.9
16	430	22.4	16.5	15.5	13.0	10.5	9.3	8.7

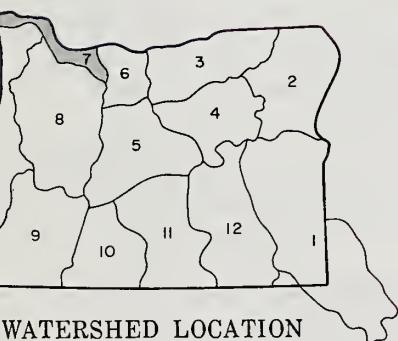
(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Observed flow corrected for storage in F.D.R., Kootenai, Pend Oreille, Flathead, Hungry Horse, Lake Chelan, Coeur d'Alene and Grand Coulee Equalizer. (d) Not scheduled. (e) Observed peak. (f) Based on Corps of Engineers automatic water stage recorder data. (g) Vancouver Weather Bureau gage zero is 1.82' above M.S.L. All other readings are in feet above M.S.L.

# LOWER COLUMBIA WATERSHEDS

10 0 10 20 30  
SCALE IN MILES

PACIFIC

OCEAN



WATERSHED LOCATION



## LEGEND

- Watershed Boundary
- Sub-watershed Boundary
- Soil Conservation District Bdry
- County Boundary
- (50) River Miles

# Lower Columbia Watersheds



"The Conservation of Water begins with the Snow Survey"

# WATER SUPPLY OUTLOOK WILLAMETTE WATERSHEDS OREGON

*as of*  
January 1, 1961

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

## GENERAL OUTLOOK

The 1961 water supply outlook for the Willamette Valley is better than last year's "fair" outlook on January 1, but is still below average at this early date.

## SNOW COVER

Measurements of snow cover on Willamette watersheds January 1st revealed about two and one-half times as much water content as on that date last year. Although this is much better than last year it is still only 49 percent of the January 1 average for the 1943-57 period.

The maximum accumulation of snow in this area is generally reached by April 1. Under average conditions about 35 percent of the total winter "snow crop" is on the ground by January 1. This year, current snow surveys indicate the 21 percent level has been reached. Although this is still 14 percent below the average it is much better than the scanty 8 percent at the beginning of the season last year.

## SOIL-MOISTURE

Watershed soils benefitted greatly from above normal November rainfall. Even though the heavy November rains did not bring the total since October 1st up to normal, they penetrated most of the higher slopes of the watershed before the soil surface froze. This extra soil moisture will greatly aid future snow-melt runoff.

## RESERVOIR STORAGE

The 5 multi-purpose reservoirs in the Willamette Valley are now at minimum flood pool level and will be filled as the winter progresses, according to a pre-arranged plan determined by the U. S. Corps of Engineers.

## STREAMFLOW

The flow of the Middle Fork of the Willamette\* has averaged 85 percent of normal since October 1.

October and December were 60 and 66 percent of average respectively, but heavy November rainfall brought 125 percent normal streamflow for that month.

A normal spring and summer flow on Willamette Valley streams will depend on storms and weather conditions during the next 90 days bringing the snow pack closer to normal.

\*Preliminary data furnished by U.S. Geological Survey, Portland, Oregon

# WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair",  
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Calapooia		
Clackamas		
McKenzie		
Molalla		
Santiam, North		
Santiam, South		
Willamette, Coast Fork		
Willamette, Middle Fork		

Forecasts begin in  
the February 1  
report which will  
reach you about  
February 9, 1961.

# RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	1943-57 AVERAGE
Cottage Grove	30.0*	0.0	0.1	3.0
Detroit	299.9*	0.0	0.0	--
Dorena	70.5*	0.2	0.9	5.3
Fern Ridge	94.2*	0.2	0.1	15.8
Lookout Point	337.2*	3.1	0.5	--

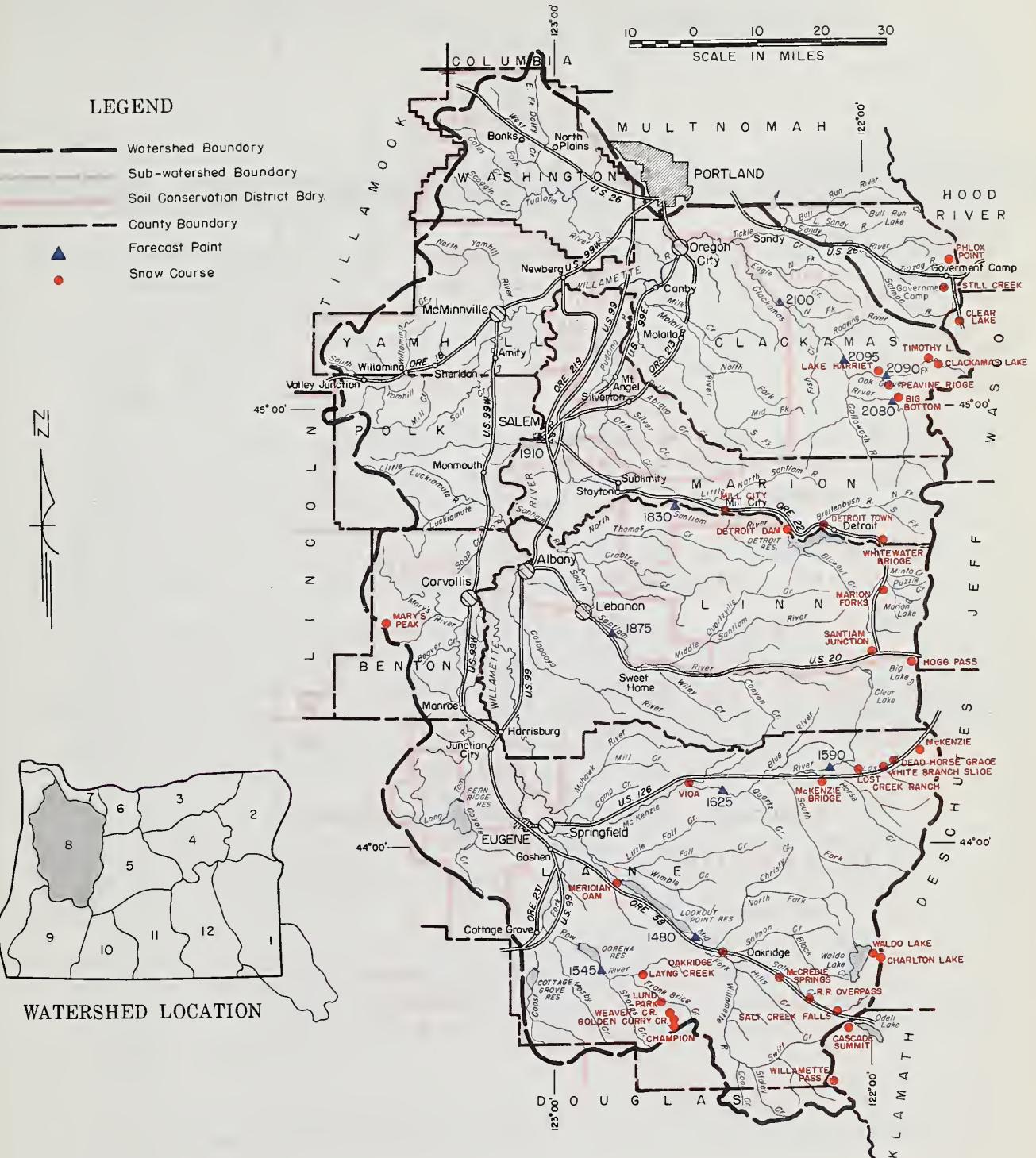
\*Multiple purpose  
reservoir--space  
reserved primarily  
for flood runoff.

# STREAMFLOW FORECASTS<sup>a</sup> (1,000 Ac. Ft.)

NO.	FORECAST POINT NAME	FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE		THIS YEAR AS PERCENT OF AVERAGE <sup>b</sup>
2080	Clackamas at Big Bottom	c	April-Sept.	184		
2100	Clackamas at Estacada	c	April-July	150		
2095	Clackamas above Three Lynx	c	April-Sept.	879		
1590	McKenzie at McKenzie Bridge	c	April-July	763		
1625	McKenzie near Vida	c	April-Sept.	674		
2090	Oak Grove Fork above Power Intake	c	April-Sept.	578		
1545	Row near Dorena	c	April-July	640		
1830	Santiam, North at Mehama <sup>d</sup>	c	April-Sept.	488		
1875	Santiam, South at Waterloo	c	April-Sept.	1362		
1480	Willamette, Mid. Fk. blw. N. Fk. nr. Oakridge	c	April-July	1120		
1910	Willamette at Salem <sup>e</sup>	c	April-Sept.	198		
		c	April-July	156		
		c	April-Sept.	114		
		c	April-July	109		
		c	April-Sept.	968		
		c	April-July	866		
		c	April-Sept.	652		
		c	April-July	616		
		c	April-Sept.	909		
		c	April-July	804		
		c	April-Sept.	5461		
		c	April-July	4942		

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed.

# WILLAMETTE WATERSHEDS



# Willamette Watersheds

## SNOW

SNOW COURSE		CURRENT INFORMATION			PAST RECORD		
NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)	1943-57 AVERAGE	YEARS IN AVERAGE <sup>b</sup>
Big Bottom	2118	12/30	0	0.0	0.6	2.2	6
Cascade Summit	4880	12/29	26	8.7	5.1	15.6	9
Champion	4500	12/29	11	3.3	3.9	10.5	8
Charlton Lake	5750	c					
Clackamas Lake	3400	c					
Clear Lake	3500	12/28	5	2.0	0.2	--	0
Clear Lake Experimental	3500	12/28	14	4.3	0.5	--	0
Dead Horse Grade	3800	12/24	12	4.1	1.5	7.8	6
Detroit Town	1610	12/27	0	0.0	0.0	0.3	7
Detroit Dam	1580	12/27	0	0.0	0.0	0.4	7
Golden Curry Creek	3136	12/29	0	0.0	0.5	5.0	7
Hogg Pass	4755	12/27	37	11.6	2.7	18.4	15
Lake Harriet	2045	12/29	0	0.0	0.8	1.0	6
Layng Creek	1200	12/29	0	0.0	0.0	T	7
Lost Creek Ranch	1956	12/24	0	0.0	0.0	0.0	5
Lund Park	1740	12/29	0	0.0	0.0	1.4	7
Marion Forks	2730	12/27	4	1.8	0.2	5.7	15
Marys Peak	3620	c					
McCredie Springs	2120	12/29	0	0.0	0.0	0.5	8
McKenzie	4800	12/24	32	10.8	3.9	17.8	6
McKenzie Bridge	1372	12/24	0	0.0	0.0	T	6
Meridian Dam	750	12/29	0	0.0	0.0	0.0	8
Mill City	826	12/27	0	0.0	0.0	0.0	6
Oakridge	1310	12/29	0	0.0	0.0	0.1	8
Peavine Ridge	3500	12/30	9	3.5	2.0	7.5	15
Phlox Point	5600	12/28	58	21.5	5.3	26.8	13
Railroad Overpass	2750	12/29	0	0.0	T	1.5	8
Salt Creek Falls	4000	12/29	T	T	2.2	7.2	8
Santiam Junction	3990	12/27	16	5.5	1.3	10.7	15
Still Creek	3700	12/28	16	5.8	1.2	11.4	12
Timothy Lake	3295	12/30	11	3.7	1.5	--	2
Vida	800	12/24	0	0.0	0.0	0.0	6
Waldo Lake	5500	c					
Weaver Creek	2440	12/29	0	0.0	0.0	0.4	6
White Branch Slide	2800	12/24	1.5	T	T	2.1	6
Whitewater Bridge	2175	12/27	T	T	T	3.4	8
Willamette Pass	5600	c					

"The Conservation of Water begins with the Snow Survey"

# WATER SUPPLY OUTLOOK ROGUE, UMPQUA WATERSHEDS OREGON

*as of*  
**January 1, 1961**

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

**GENERAL OUTLOOK** - The 1961 irrigation water supply outlook in Rogue-Umpqua watersheds is considerably improved over the skimpy outlook of a year ago but is still below average.

**SNOW COVER** - Water content of the mountain snow cover is 28 percent below average for January 1 but is more than double that of last year at this date, especially at the higher elevations.

Maximum accumulation of snow on local watersheds is usually reached by April 1st. In an average year about 37 percent of the total winter's "snow crop" is on the ground by January 1st. This year, current snow surveys indicate the 25 percent level has been reached.

**SOIL-MOISTURE** - Mountain watershed soils are unusually wet, principally because of the heavy rains in late November and early December.

Fall precipitation\* (September through November) was just slightly over the 15-year average (1943-57) with one-half of it measured in November. Winter precipitation, beginning December 1st, has been only 60 percent of the average.

**RESERVOIR STORAGE** - Stored water for the Medford Irrigation District, held in Fish Lake and Fourmile Lake Reservoirs, is 43 percent of the average for this date and 75 percent of the amount available last year on January 1st.

The three reservoirs storing water for use by the Talent Irrigation District, Emigrant Gap, Hyatt Prairie and Howard Prairie, contain water totaling 85 percent of the average for this date and 166 percent of the amount available last year on January 1st.

Reservoir water supplies for many lands may be short this summer unless unusually heavy storms are experienced to change the outlook.

**STREAMFLOW** - Flow of the Rogue River at Raygold\*\* has averaged 67 percent of the 1943-57 normal since October 1st. The December flow was only 54 percent of average.

Flow of southern Oregon streams is expected to be somewhat below the average this spring and summer unless storm patterns favor the accumulation of heavy amounts of snow.

\* From River Forecast Center of the U.S. Weather Bureau, Portland, Oregon

\*\* Preliminary data furnished by U.S. Geological Survey, Portland, Oregon

Report prepared by

W.T. FROST AND BOB L. WHALEY

U.S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE  
209 S.W. FIFTH AVENUE - PORTLAND 4, OREGON

# WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair",  
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Althouse Creek		
Applegate River, Big		
Applegate River, Little		
Ashland Creek		
Butte Creek, Little		
Butte Creek, Big		
Cow Creek		
Deer Creek		
Elk Creek		
Emigrant Cr. (above Res.)		
Evans Creek		
Gold Hill Irrigation Dist.		
Grants Pass Irrig. Dist.		
Grave Creek		
Illinois River, East Fork		
Illinois River, West Fork		
Neil Creek		
Red Blanket Creek		
Rogue River		
Sucker Creek		
Table Rock Irrig. Dist.		
Thompson Creek		
Wagner Creek		
Williams Creek		

# RESERVOIR STORAGE (1,000 Ac. Ft.)

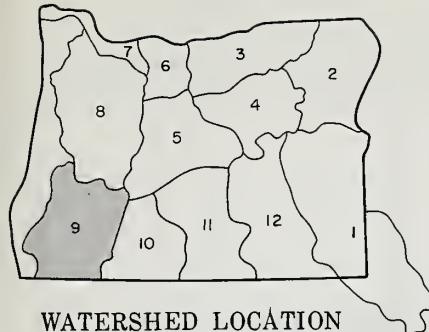
RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	1943-57 AVERAGE
Emigrant Gap	39.0	6.5	0.0 <sup>h</sup>	3.8
Fish Lake	7.8	3.0	3.4	4.6
Fourmile Lake	16.1	2.3	3.7	7.7
Howard Prairie	60.0	11.4	5.6	--
Hyatt Prairie	16.1	1.3	6.0	5.4

# STREAMFLOW FORECASTS<sup>a</sup> (1,000 Ac. Ft.)

NO.	FORECAST POINT NAME	FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE	THIS YEAR AS PERCENT OF AVERAGE <sup>b</sup>
3620	Applegate near Copper	c	April-Sept.	131	
3145	Clearwater above Trap Creek <sup>d</sup>	c	April-Sept.	73	
5045	Fourmile Lake net Inflow <sup>d</sup>	c	April-Sept.	7.4	
5140	Hyatt Reservoir net Inflow <sup>d</sup>	c	April-Sept.	6.2	
3770	Illinois River at Kerby <sup>d</sup>	c	April-Sept.	196	
3425	Little Butte, N. Fk. at Fish Lake nr. Lk. Cr. <sup>d</sup>	c	April-Sept.	16.9	
3415	Little Butte, S. Fk. near Lake Creek	c	April-July	42	
3280	Rogue above Prospect	c	April-Sept.	351	
3320	Rogue, South Fork near Prospect <sup>d</sup>	c	April-Sept.	293	
		c	April-July	83	
3350	Rogue below South Fork	c	April-Sept.	71	
		c	April-July	749	
3590	Rogue at Raygold near Central Point	c	April-Sept.	608	
		c	April-July	1004	
3615	Rogue at Grants Pass	c	April-Sept.	842	
3135	Umpqua, North blw. Lemolo Res. near Toketee Falls <sup>d</sup>	c	April-Sept.	974	
		c	April-Sept.	186	

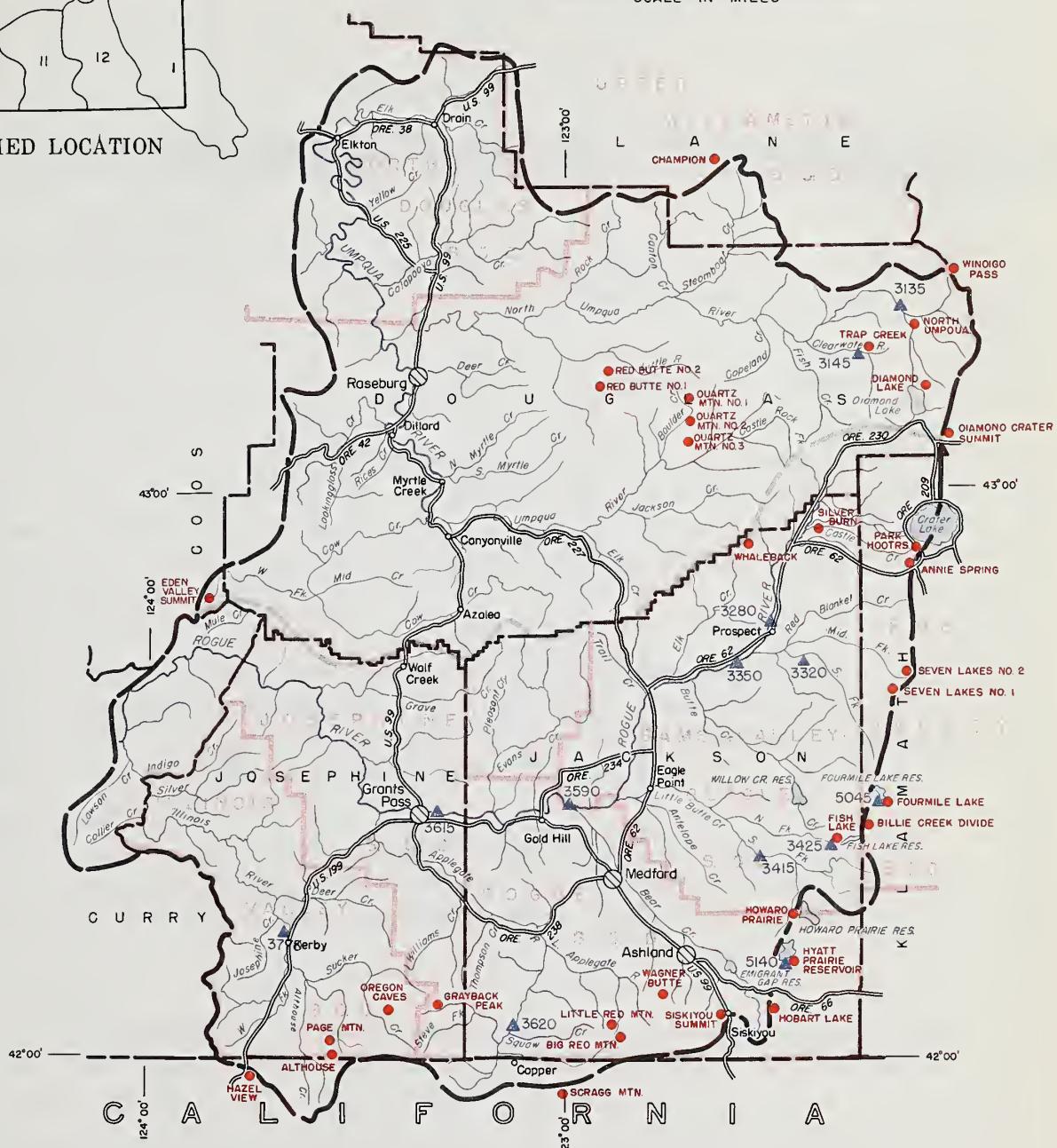
(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Not Surveyed. (h) Construction. (i) 7 of 18 sampling points. (j) Partly estimated.

# ROGUE, UMPQUA WATERSHEDS



## WATERSHED LOCATION

10      0      10      20      30  
SCALE IN MILES



## LEGEND

- The legend consists of six entries, each with a colored line segment followed by a label:
  - Watershed Boundary (dark blue)
  - Sub-watershed Boundary (light blue)
  - Soil Conservation District Bdry. (pink)
  - County Boundary (black)
  - Forecast Point (blue triangle)
  - Snow Course (red circle)

Rogue, Umpqua Watersheds

**SNOW**

SNOW COURSE		CURRENT INFORMATION			PAST RECORD		
		DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)		YEARS IN AVERAGE <sup>b</sup>
NAME	ELEVATION				LAST YEAR	1943-57 AVERAGE	
Althouse	4530	c					
Annie Spring	6018	12/27	50	16.5	5.3	17.7	12
Beaver Dam Creek	5100	12/30	16	5.4	2.2	--	0
Big Red Mountain	6500	c					
Billie Creek Divide	5300	12/29	25	9.1	3.6	10.5	12
Champion	4500	12/29	11	3.3	3.9	10.5	8
Cold Springs Camp	6100	c					
Deadwood Junction	4600	12/30	9	2.6	2.1	--	0
Diamond-Crater Summit	5800	12/28	38	12.3	3.0	--	0
Diamond Lake	5315	12/28	22	7.5	2.2	10.5	14
Eden Valley Summit	2390	f					
Fish Lake	4865	12/28	12	4.4 <sup>i</sup>	1.5	6.2	14
Fourmile Lake	6000	12/28	34	12.6	--	--	4
Grayback Peak	6000	c					
Hazel View	2500	c					
Hobart Lake	5010	g					
Howard Prairie	4500	12/30	10	3.2	1.0	--	0
Hyatt Prairie Reservoir	4900	12/29	7	2.0	1.8	4.4	14
Little Red Mountain	6500	c					
North Umpqua	4215	1/4	10	3.4	1.8	--	2
Page Mountain	4045	c					
Park Headquarters	6450	12/27	65	21.3 <sup>j</sup>	7.4	23.0	12
Red Butte #1	4560	12/27	4	1.3	1.4	--	0
Red Butte #2	4000	12/27	T	T	1.4	--	0
Rye Spring Spur	5000	12/28	4	1.4 <sup>j</sup>	2.1	--	0
Seven Lakes #1	6800	c					
Seven Lakes #2	6200	c					
Silver Burn	3720	12/29	7	2.3	1.4	5.1	15
Siskiyou Summit	4630	12/30	0	0.0	--	3.4	15
South Fork Canal	3500	12/29	0	0.0	0.5	1.5	14
Trap Creek	3800	1/4	6	2.8	--	--	1
Wagner Butte	6900	c					
Whaleback	5140	c					
Windigo Pass	5800	c					

# WATER SUPPLY OUTLOOK KLAMATH WATERSHEDS OREGON

*as of*  
January 1, 1961

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

## GENERAL OUTLOOK

The 1961 irrigation water supply outlook for Klamath Basin lands is considerably improved on the skimpy outlook of a year ago but is still below average.

## SNOW COVER

Water content of the mountain snow pack is only 75 percent of average but it is three times greater than it was last year on January 1.

The maximum snow accumulation in Klamath Basin is usually reached by April 1st. Under average conditions about 40 percent of the total winter's "snow crop" is on the ground by January 1. This year, current snow surveys indicate the 34 percent level has been reached. Last year the January 1st accumulation was only 12 percent.

## SOIL-MOISTURE

The soil mantle on mountain watersheds is considerably wetter than last year. Heavy November rains penetrated the soils in the Bly Mountain area to a depth of 12 to 18 inches as determined by a new soil moisture station established there. This moisture favors a good runoff from snow-melt.

## RESERVOIR STORAGE

Stored water in Upper Klamath Lake is about average and 28 percent greater than last year at this date. Total water stored in Gerber and Clear Lake Reservoirs is about half of the average but is 30 percent less than last year on January 1st.

## STREAMFLOW

Inflow into Upper Klamath Lake\* has been 88 percent of average since October 1st. There has been some early winter flow into both Gerber and Clear Lakes but more will be needed to meet water requirements.

Storms and weather conditions during the remaining 90 days of winter can change this outlook considerably.

\*Preliminary data from California-Oregon Power Company, Medford, Oregon

*Report prepared by*

W.T. FROST AND BOB L. WHALEY

U.S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE  
209 S.W. FIFTH AVENUE - PORTLAND 4, OREGON

# WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair"  
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Ft. Klamath Valley Lost River (Clear Lake) Lost River (Gerber) Lost River (Willow Res.) Sprague River Upper Klamath Lake Williamson River		Forecasts begin in the February 1 report which will reach you about February 9, 1961.

# RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	1943-57 AVERAGE
Clear Lake	440.2	108.9	160.2	195.3
Gerber	94.0	3.4	2.7	33.8
Upper Klamath Lk.	584.0	302.7	237.1	313.2

# STREAMFLOW FORECASTS<sup>a</sup> (1,000 Ac. Ft.)

NO.	FORECAST POINT NAME	FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE		THIS YEAR AS PERCENT OF AVERAGE <sup>b</sup>
				1943-57 AVERAGE	THIS YEAR AS PERCENT OF AVERAGE <sup>b</sup>	
923	Clear Lake Reservoir inflow <sup>g</sup>	c	April-Sept. March-July	50 88		
8215	Gerber Reservoir inflow <sup>g</sup>	c	April-Sept. March-July	25 44		
5010	Sprague near Chiloquin	c	April-Sept.	296		
5070	Upper Klamath Lake net inflow <sup>g</sup>	c	April-Sept. April-July	632 518		
5025	Williamson below Sprague River <sup>d</sup>	c	April-Sept. April-July	486 413		

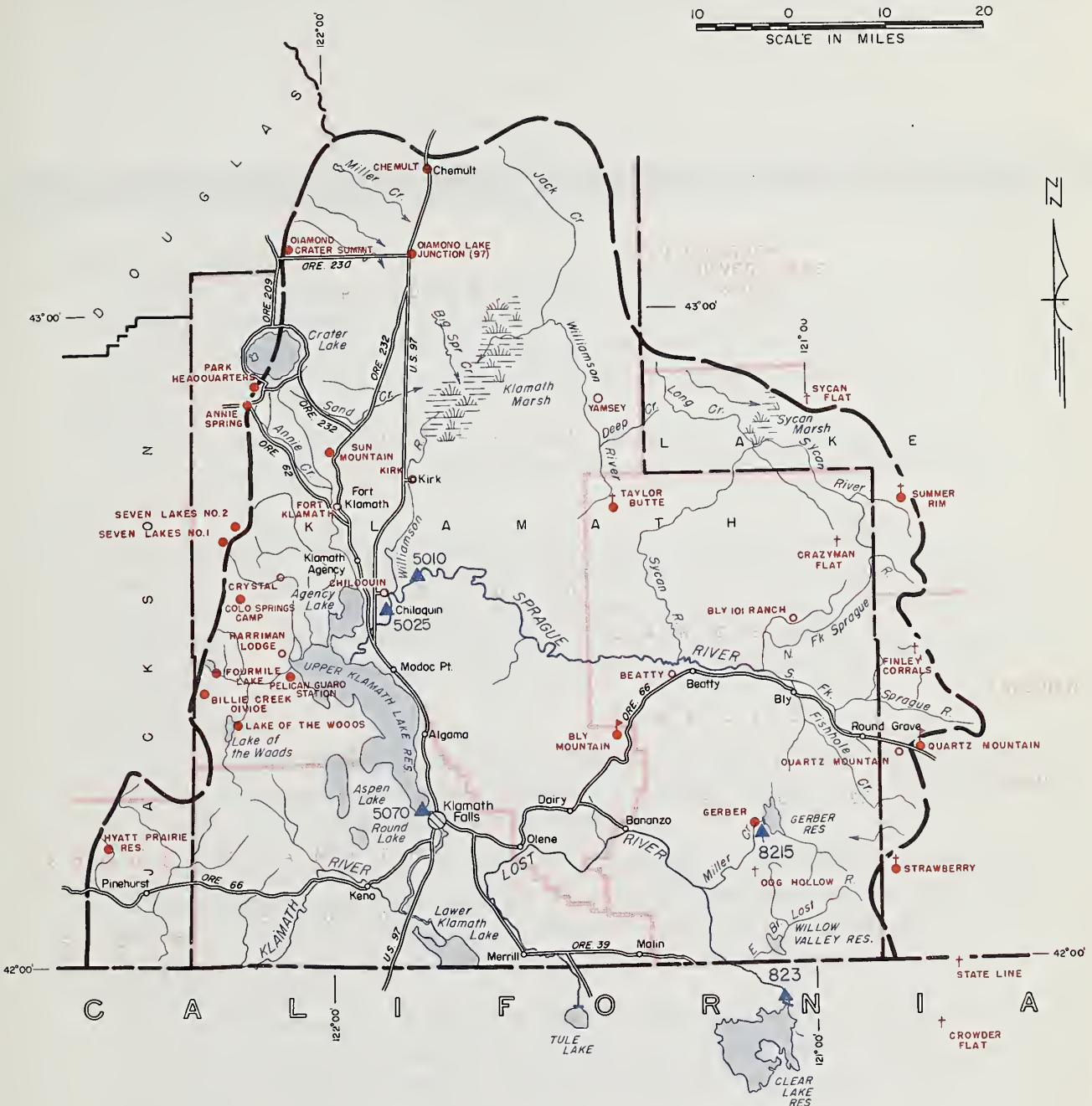
# SNOW

SNOW COURSE	CURRENT INFORMATION			PAST RECORD			
	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches) LAST YEAR	YEARS IN AVERAGE <sup>b</sup>
Annie Spring	6018	12/27	50	16.5	5.3	17.7	12
Beatty (COPCO)	4300	1/1	0	0.0	0.1	0.2	15
Billie Creek Divide	5300	12/29	25	9.1	3.6	10.5	12
Bly Mountain	5090	12/28	11	3.0	0.9	--	0
Bly 101 Ranch (COPCO)	4800	f					
Chemult	4760	12/28	12	4.4	1.6	5.8	14
Chiloquin (COPCO)	4187	f					
Cold Springs Camp	6100	c					
Crazyman Flat <sup>e</sup>	6100	c					
Crowder Flat <sup>e</sup>	5200	c					
Crystal (COPCO)	4200	1/1	8	2.4	1.6	4.5	15
Diamond-Crater Summit	5800	12/28	38	12.3	3.0	--	0
Diamond Lake Junction (97)	4600	12/30	9	2.4	1.1	--	0
Dog Hollow <sup>e</sup>	4900	c					
Finley Corrals <sup>e</sup>	6000	c					
Fort Klamath (COPCO)	4150	f					
Gerber	4850	12/31	T	T	--	5.6	6
Harriman Lodge (COPCO) (Renamed Tomahawk Ski Bowl)	4200	1/1	0	0.0	0.1	2.2	15
Hyatt Prairie Reservoir	4900	12/29	7	2.0	1.8	4.4	14
Kirk (COPCO)	4533	1/1	8	2.0	0.2	3.6	15
Lake of the Woods	4960	12/29	14	5.6	2.4	5.2	14
Park Headquarters	6450	12/27	65	21.3 <sup>i</sup>	7.4	23.0	12
Pelican Guard Station	4150	12/30	4	1.2	0.6	--	0
Quartz Mountain	5320	12/28	7	2.0	1.0	3.6	14
Quartz Mountain (COPCO)	5504	12/28	9	2.4	1.0	3.7	13
Seven Lakes #1	6800	c					
Seven Lakes #2	6200	c					
State Line <sup>e</sup>	5750	c					
Strawberry <sup>e</sup>	5600	c					
Summer Rim <sup>e</sup>	7200	c					
Sun Mountain	5350	12/22	32	8.9	1.0	12.0	15
Sycan Flat <sup>e</sup>	5500	c					
Taylor Butte <sup>e</sup>	5100	12/22	10	2.8	0.0	--	2
Yamsey (COPCO)	4600	f					

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) From COPCO or USBR records of inflow. (h) Flashboards increase capacity to 513.0 (i) Water content partly estimated.

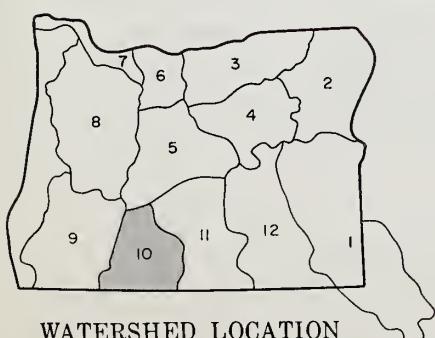
# KLAMATH WATERSHEDS

10 0 10 20  
SCALE IN MILES



## LEGEND

- Watershed Boundary
- Sub-watershed Boundary
- Soil Conservation District Bdry.
- County Boundary
- Forecast Point
- Snow Course
- Aeriel Snow Depth Gage
- COPCO Snow Station
- Soil Moisture Station



WATERSHED LOCATION



# WATER SUPPLY OUTLOOK LAKE COUNTY, GOOSE LAKE WATERSHEDS OREGON

*as of*  
January 1, 1961

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

## GENERAL OUTLOOK

The 1961 irrigation water supply outlook for Lake County is a little better than last year's scrimpy outlook at this date but is still below average. The snow pack is much better than last year but well below the 1943-57 average for January 1 and carry-over reservoir storage is less than at this date last year.

## SNOW COVER

The water content of snow measured about January 1st this year is two and one-half times last year's scanty reports, but it is still only 60 percent of the 1943-57 average.

Snow accumulation on Lake County watersheds has usually reached its peak by April 1st. Under average conditions about 56 percent of the total winter "snow crop" is on the ground by January 1. This year, current snow surveys indicate the 38 percent level has been reached. This is 22 percent better than last year although it is still 18 percent short of the January 1 average for the 1943-57 period.

## SOIL-MOISTURE

A new soil moisture station near Quartz Mountain highway summit indicates that fall rains have penetrated about 12 inches in the area and other parts of the county are believed to have about the same penetration.

Fall rains at Lakeview since October 1 total 95 percent of average. November received almost twice its average but October and December were only 11 percent and 77 percent respectively, to make the total fall precipitation just slightly under average.

## RESERVOIR STORAGE

Drews Reservoir contains 6,900 acre feet of water, which is only 20 percent of the January 1st average and is even less than on the same date last year. Cottonwood Reservoir is reported as containing 500 acre feet of water, which is better than its January 1 average of 200 acre feet.

## STREAMFLOW

The streamflow outlook for Lake County during the coming irrigation season is slightly better than last year at this time but it is still expected to be less than average. Storms and general weather conditions during the next 90 days can change this outlook considerably.

Report prepared by

W.T. FROST AND BOB L. WHALEY

U.S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE  
209 S.W. FIFTH AVENUE - PORTLAND 4, OREGON

# WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair",  
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Chewaucan River		
Crooked Creek		
Deep Creek		
Dry Creek		
East Side Goose Lake		
Guano Lake		
Honey Creek		
Lakeview Water Users Assn.		
Rock Creek (Hart Mtn.)		
Silver-Buck Creeks		
Summer Lake		
Thomas Creek		
Twenty-mile Creek		
Warner Lakes		

# RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	1943-57 AVERAGE
Cottonwood	4.1	0.5	0.0	0.2
Drew	63.0	6.9	8.5	34.8

# STREAMFLOW FORECASTS<sup>a</sup> (1,000 Ac. Ft.)

NO.	FORECAST POINT NAME	FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE	THIS YEAR AS PERCENT OF AVERAGE <sup>b</sup>
				AVERAGE	
3840	Chewaucan near Paisley	c	April-June	82	
3715	Deep above Adel	c	April-June	71	
3385	Drew Reservoir net inflow	c	April-July	34	
3785	Honey near Plush <sup>c</sup>	c	March-July	47	
3660	Twenty-mile near Adel	c	April-June	16.3	
			April-June	20	

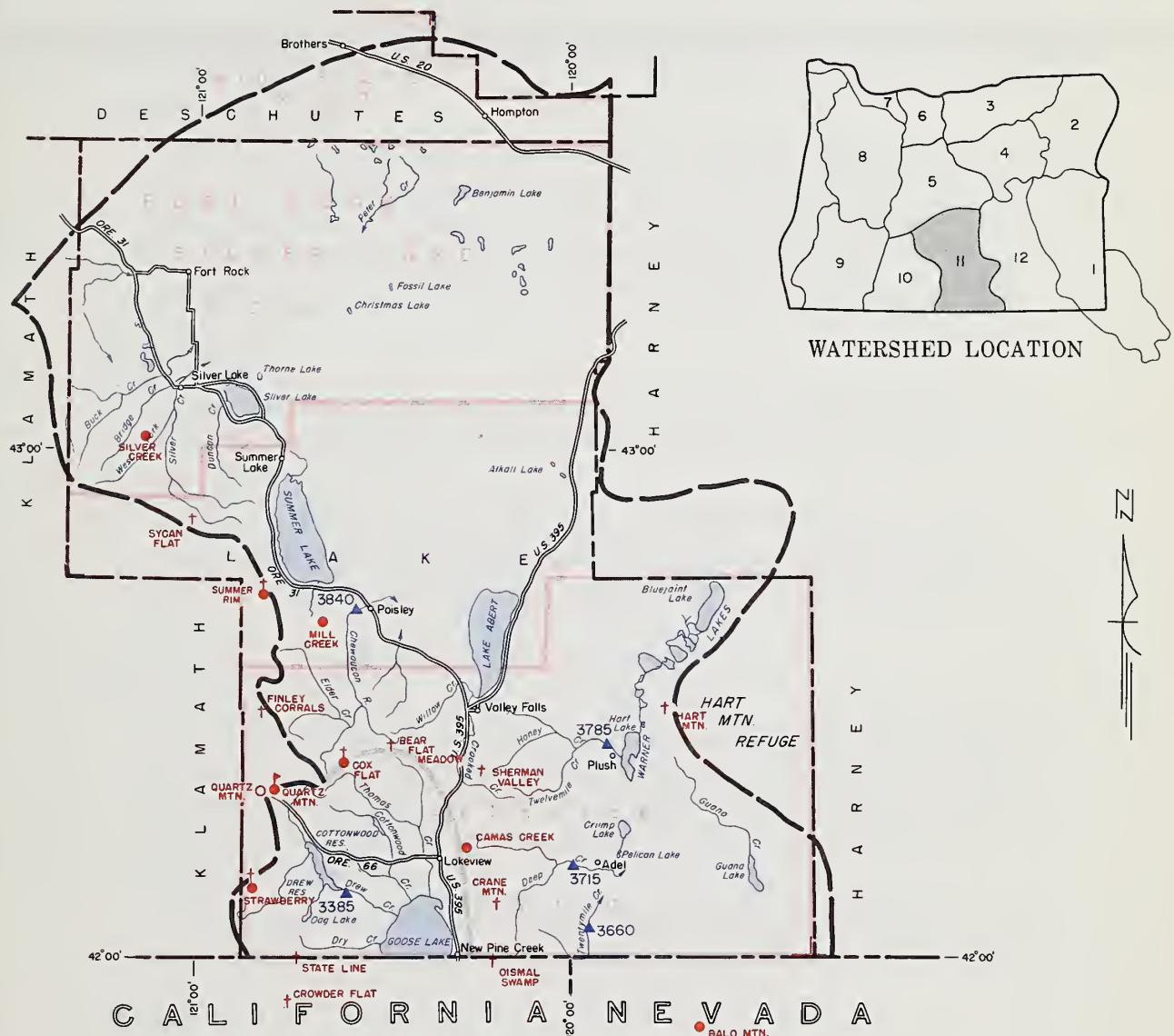
# SNOW

SNOW COURSE	CURRENT INFORMATION				PAST RECORD		
	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH (inches)	WATER CONTENT (inches)	WATER CONTENT (inches)	YEARS IN AVERAGE
						LAST YEAR	1943-57 AVERAGE
Bald Mountain (Nev.)	6720	c					
Bear Flat Meadow <sup>e</sup>	5900	c					
Camas Creek	5720	12/26	14	4.8	--	--	0
Cox Flat <sup>e</sup>	5750	c					
Crane Mountain <sup>e</sup>	6020	c					
Crowder Flat <sup>e</sup>	5200	c					
Dismal Swamp <sup>e</sup> (Calif.)	7000	c					
Finley Corrals <sup>e</sup>	6000	c					
Hart Mountain <sup>e</sup>	6350	c					
Mill Creek	6200	c					
Mosquito Lake <sup>e</sup> (Little Bally Mtn.)	6600	c					
Quartz Mountain (COPCO)	5504	12/28	9	2.4	1.0	3.7	13
Quartz Mountain	5320	12/28	7	2.0	1.0	3.6	14
Sherman Valley <sup>e</sup>	6600	c					
Silver Creek	4900	12/28	5	1.7	0.4	--	1
State Line <sup>e</sup>	5750	c					
Strawberry <sup>e</sup>	5600	c					
Summer Rim <sup>e</sup>	7200	c					
Sycan Flat <sup>e</sup>	5500	c					

(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed.

# LAKE COUNTY, GOOSE LAKE WATERSHEDS

10 0 10 20 30  
SCALE IN MILES



# Lake County, Goose Lake Watersheds

*"The Conservation of Water begins with the Snow Survey"*

# WATER SUPPLY OUTLOOK HARNEY BASIN WATERSHEDS OREGON

*as of*  
January 1, 1961

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE, OREGON AGRICULTURAL EXPERIMENT STATION and OREGON STATE ENGINEER

## GENERAL OUTLOOK

The 1961 irrigation water supply outlook for Harney Basin is much better than the poor outlook forecast at this time last year although late summer water supplies are expected to be less than average. Snow measurements this year indicate twice as much water content as last year and moisture penetration in the soil profile is already favorable for good spring runoff.

## SNOW COVER

Snow measurements at key courses in the northern end of the basin now have 57 percent of the average January 1 water content for the 1943-57 period.

Snow cover over the watershed usually reaches 4 tenths of the years maximum water content by January 1. This year, a little less than 3 tenths of an average year's maximum snow water has been measured to date.

## SOIL-MOISTURE

Moisture from heavy November rains has penetrated the soil-mantle from 18 to 24 inches at higher elevations but nearer 12 inches in the plateau and lower areas. Soil moisture measurements taken at key stations over the basin indicate that the soil profile is now wet up to 70 percent of its available capacity.

The total soil-moisture is about the same as last year although it is concentrated nearer the surface and should aid considerably in spring runoff.

## STREAMFLOW

Streamflow during the coming runoff season will be aided by the good penetration of soil-moisture over most of the watershed. Although it appears now that the coming irrigation season will have slightly below normal streamflow, the remaining winter months can change the situation.

Report prepared by

W.T. FROST AND BOB L. WHALEY

U.S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

209 S.W. FIFTH AVENUE • PORTLAND 4, OREGON

# WATER SUPPLY OUTLOOK

expressed as "Poor", "Fair",  
"Average" or "Excellent"

STREAM or AREA	FLOW PERIOD	
	SPRING SEASON	LATE SEASON
Catlow Valley		
Cow Creek		
Donner und Blitzen River		
Mill-Coffeepot Creeks		
Rattlesnake Creek		
Silver Creek		
Silvies River		
Soldier-Prather Creek		
Trout Creek		
Whitehorse Creek		

# RESERVOIR STORAGE (1,000 Ac. Ft.)

RESERVOIR	USABLE CAPACITY	MEASURED (First of Month)		
		THIS YEAR	LAST YEAR	1943-57 AVERAGE

# STREAMFLOW FORECASTS<sup>a</sup> (1,000 Ac. Ft.)

FORECAST POINT		FORECAST THIS YEAR	FORECAST PERIOD	1943-57 AVERAGE	THIS YEAR AS PERCENT OF AVERAGE
NO.	NAME				
3960	Donner und Blitzen near Frenchglen	c	April-Sept.	67	
3935	Silvies near Burns	c	April-Sept.	107	
4065	Trout near Denio	c	April-Sept.	9.2	

# AVAILABLE SOIL MOISTURE

STATION	PROFILE (Inches)			SOIL MOISTURE (Inches)		
	DEPTH	AVAILABLE CAPACITY	DATE	THIS YEAR	LAST YEAR	2 YEARS AGO
NAME	ELEVATION					
Blue Mtn. Springs	5900	42	12.0	10-14-60	1.3	--
Fish Creek	7600	48	9.5	i		7.8
Folly Farm	4450	36	8.3	12-15-60	5.5 <sup>h</sup>	5.3 <sup>h</sup>
Silvies	6900	48	10.3	i		4.6 <sup>h</sup>
Snow Mountain	6300	48	10.4	i		
Starr Ridge	5150	36	6.1	12-14-60	3.3 <sup>h</sup>	4.9 <sup>h</sup>
Stinking Water	4800	48	11.7	12-15-60	11.0 <sup>h</sup>	10.6 <sup>h</sup>
Willow-Bald	5000	24	4.3	12-16-60	1.5	1.0

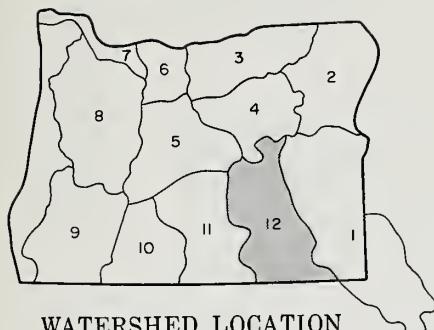
# SNOW

SNOW COURSE	CURRENT INFORMATION			PAST RECORD		
	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)		YEARS IN AVERAGE <sup>b</sup>
NAME				LAST YEAR	1943-57 AVERAGE	
Blue Mountain Springs	5900	12/28	24	5.8	1.1	6.9
Call Meadows <sup>e</sup>	5340	c				14
Delintment Lake	5600	c				
Denio Creek <sup>e</sup>	6000	c				
Disaster Peak	6500	c				
Emigrant Butte	5000	c				
Fish Creek	7900	c				
Hart Mountain <sup>e</sup>	6350	c				
Idlewild Camp	5200	12/28	10	1.6	0.3	2.7
Izee Summit	5293	12/27	13	2.6	0.9	4.8
Lake Creek R. S.	5120	12/28	13	2.0	2.1	--
Oregon Canyon <sup>e</sup>	6950	c				1
Riddle Creek <sup>e</sup> (Buck Pasture)	5700	c				
Rock Spring	5100	12/28	8	1.0	0.4	2.8
Silvies	6900	c				14
Snow Mountain	6300	c				
Starr Ridge	5150	12/27	9	2.0	1.3	3.2
Stinking Water	4800	12/28	T	T	1.2	2.3
Trout Creek <sup>e</sup>	7800	c				5
"W" Lake <sup>e</sup>	6600	c				8

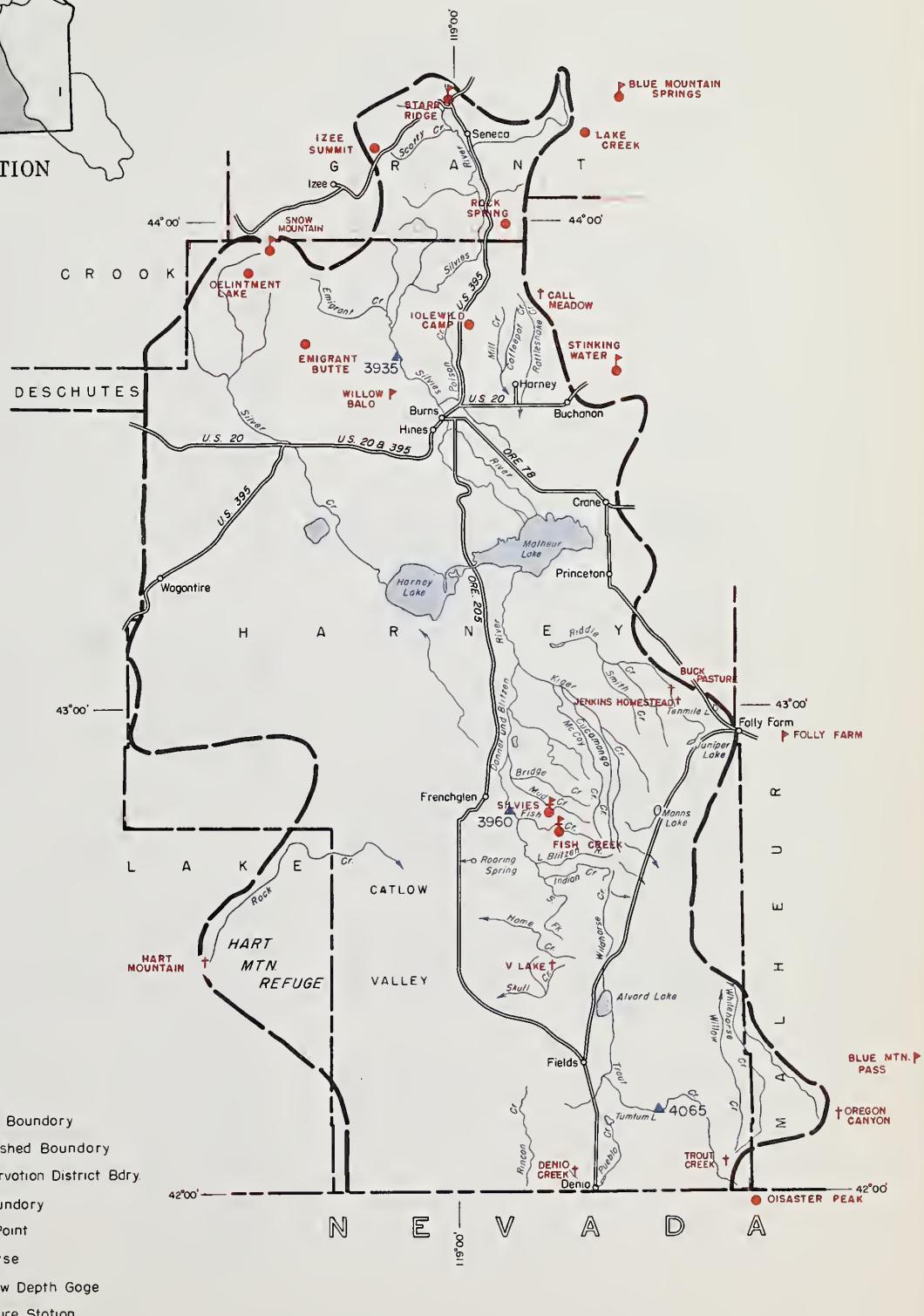
(a) Assuming normal meteorological conditions. (b) 1943-57, 15 year period. (c) Not scheduled. (d) Corrected to natural flow. (e) Aerial snow depth gage; water content estimated. (f) Report delayed. (g) Not surveyed. (h) Partly estimated. (i) No Fall measurement.

# HARNEY BASIN WATERSHEDS

10 0 10 20 30  
SCALE IN MILES

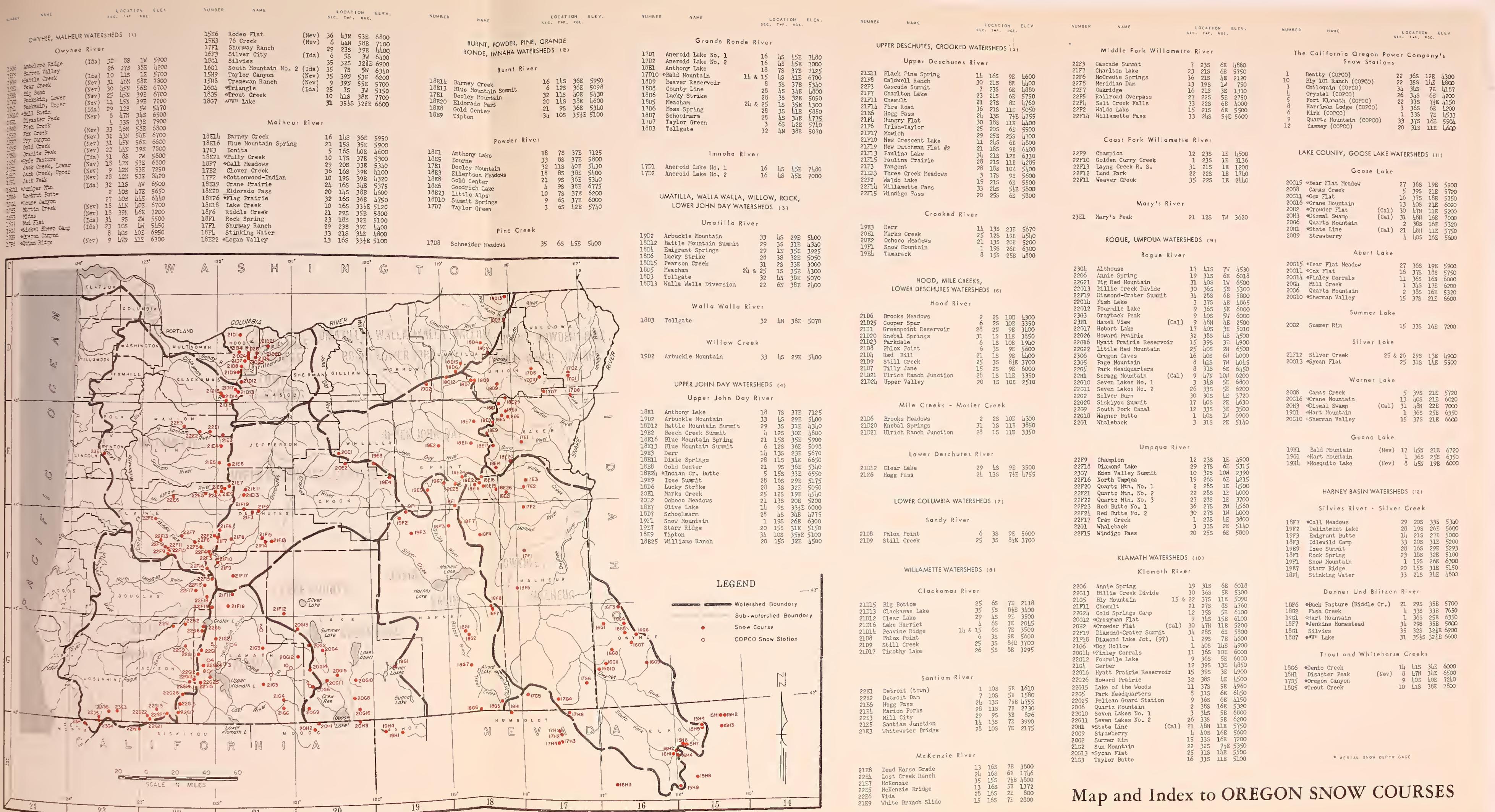


WATERSHED LOCATION



# Harney Basin Watersheds

*"The Conservation of Water begins with the Snow Survey"*





# The Following Organizations Cooperate in the Oregon Snow Survey Work

## STATE

Idaho Cooperative Snow Surveys  
Nevada Cooperative Snow Surveys  
Oregon Agricultural Experiment Station  
Oregon State Engineer and Corps of State Watermasters  
Oregon State Highway Engineers  
Soil Conservation Districts of Oregon

## COUNTY

Douglas County Water Resources Survey

## FEDERAL

Department of Agriculture  
Cooperative Extension Service  
Forest Service  
Soil Conservation Service  
Department of Commerce  
Weather Bureau  
Department of the Interior  
Bonneville Power Administration  
Bureau of Land Management  
Bureau of Reclamation  
Fish and Wildlife Service  
Geological Survey  
National Park Service  
Department of National Defense  
Corps of Army Engineers

## PUBLIC UTILITIES

California-Pacific Utilities Company  
Pacific Power and Light Company  
Portland General Electric Company  
The California Oregon Power Company

## MUNICIPALITIES

City of Baker  
City of La Grande  
City of The Dalles  
City of Walla Walla

## IRRIGATION DISTRICTS

Associated Ditch Companies  
Central Oregon Irrigation District  
Deschutes County Municipal Improvement District  
East Fork Irrigation District  
Grants Pass Irrigation District  
Jordan Valley Irrigation District  
Lakeview Water Users, Incorporated  
Medford Irrigation District  
North Board of Control - Owyhee Project  
North Unit Irrigation District  
Ochoco Irrigation District  
Rogue River Valley Irrigation District  
South Board of Control - Owyhee Project  
Talent Irrigation District  
Vale-Oregon Irrigation District  
Warmsprings Irrigation District

## PRIVATE ORGANIZATIONS

Amalgamated Sugar Company  
The Crag Rats, Hood River, Oregon

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